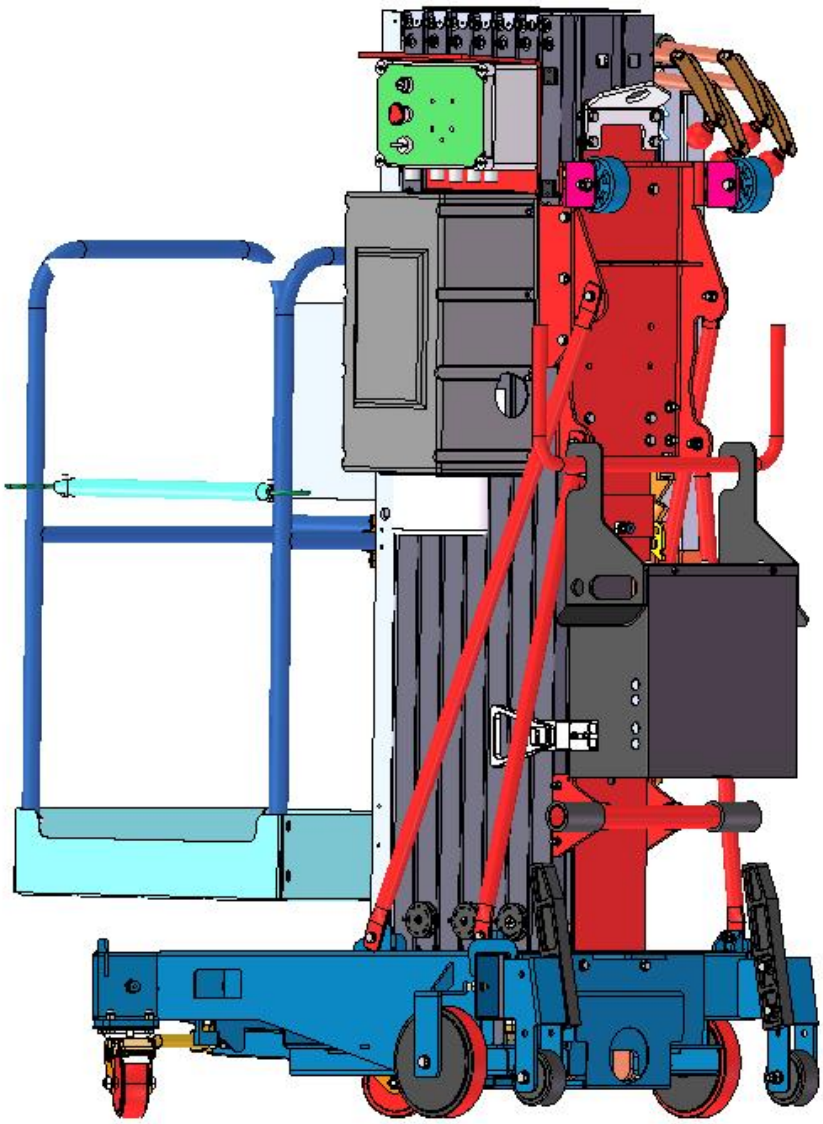
Service Manual

(GTWY Series)

Original Instructions

Version 1.0



Introduction

Important

Prior to performing any maintenance procedure on this machine, read, understand, and comply with the safety rules and operating instructions contained in the applicable Operator's Manual. This manual must remain with the machine at all times.

This manual provides detailed scheduled maintenance information for the machine owner and user. It also provides troubleshooting and repair procedures for qualified service professionals.

Basic mechanical, hydraulic, and electrical skills are required to perform most maintenance procedures. However, some procedures require specialized skills, special tools, lifting equipment, and an appropriate workshop. In these instances, we strongly recommend that maintenance and repair be performed at an authorized dealer service center.

Compliance

Machine Classification

Conforms to Group A / Type 1 as defined by ISO 16368 standard.

Machine Design Life

Unlimited, provided correct operation, inspection, and scheduled maintenance are performed.

Technical Publications

Every effort has been made to ensure the highest degree of accuracy in this document. However, it is our policy to continuously improve our products. Therefore, product specifications are subject to change without notice.

Readers are encouraged to report any errors discovered, as well as suggestions for improvement. All feedback will be carefully considered and incorporated into future editions of this manual and all other related publications.

Contact Us:

Website:

Email:

Locating Manuals for This Model

Please visit:

Use the relevant links to locate Service Manuals, Parts Manuals, and Operator's Manuals.

Copyright Information

Document No.: R01017 Rev A, April 2026
First Edition

Table of Contents

Safety Rules



Danger

Failure to comply with the instructions and safety rules contained in this manual and the corresponding Operator's Manual provided with the machine will result in death or serious injury.

Many of the hazards identified in the Operator's Manual are also present as safety risks when performing maintenance and repair procedures.

Do not modify or alter the MEWP (Mobile Elevating Work Platform) without prior written permission from the manufacturer.

Do not perform maintenance unless the following conditions are met:

☐You are trained and qualified to perform maintenance on this machine.

☐You have read, understood, and comply with:
- Manufacturer's instructions and safety rules.
- Employer's safety rules and worksite regulations
- Applicable governmental regulations

☐You possess the appropriate tools, lifting equipment, and a suitable workshop.

Personal Safety

Any person working on or around the machine must be aware of all known safety hazards. Personal safety and the continued safe operation of the machine shall be your primary concern.



Read each procedure carefully. This manual and the decals affixed to the machine use signal words to identify the following:



The Safety Alert Symbol is used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Caution indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

Notice indicates a potentially hazardous situation which, if not avoided, may result in property damage.



Always wear protective eyewear and other protective clothing as conditions warrant.



Be aware of potential crushing hazards such as moving parts, freely swinging or unsecured components when lifting or placing loads. Always wear approved steel-toed shoes.

Workplace Safety

Any person working on or around the machine must be aware of all known safety hazards. Personal safety and the continued safe operation of the machine shall be your primary concern.



Ensure that sparks, flames, and lighted tobacco are kept away from flammable and combustible materials such as battery gases and engine fuels. Always keep an approved fire extinguisher readily accessible.



Ensure that all tools and work areas are properly maintained and ready for use. Keep work surfaces clean and free of debris to prevent debris from entering machine components and causing damage.



Ensure that any forklift, overhead crane, or other lifting or supporting equipment is fully capable of supporting and stabilizing the weight to be lifted. Use only chains or slings that are in good condition and of adequate load capacity.



Ensure that single-use fasteners (such as cotter pins and self-locking nuts) are not reused. These components may fail if used a second time.



Ensure proper disposal of waste oil or other fluids. Use approved containers. Observe environmental regulations.



Ensure that your workshop or work area is well ventilated and adequately illuminated.

Product Specifications

Specification	GTWY1-6	GTWY1-8	GTWY1-9	GTWY1- 10	GTWY1- 12
Maximum Platform Height	6.2m	7.8m	9.2m	10.4m	12m
Maximum Working Height	8.2m	9.8m	11.2m	12.4m	14m
Platform Load Capacity	150kg	150kg	150kg	136kg	120kg
Maximum Occupancy	1 person	1 person	1 person	1 person	1 person
Platform Dimensions	660mm* 670mm	660mm* 670mm	660mm* 670mm	660mm* 670mm	660mm* 670mm
Overall Height	1990mm	1990mm	1990mm	1990mm	2780mm
Overall Width	760mm	760mm	760mm	760mm	760mm
Overall Length	1260mm	1300mm	1350mm	1400mmmm	1420mm
Footprint (Support Range)	1900mm* 1800mm	1900mm* 1800mm	2100mm* 2000mm	2100mm* 2000mm	2400mm* 2200mm
AC Voltage	220V	220V	220V	220V	220V
Motor Power (AC/DC)	1.5kW	1.5kW	1.5kW	1.5kW	1.5kW
DC Voltage	12V	12V	12V	12V	12V
Weight	AC 340kg DC 390kg	AC 380kg DC 430kg	AC 410kg DC 460kg	AC 430kg DC 480kg	AC 520kg DC 572kg
Platform Lift Speed (Full Load Raise Time)	28±3	32±3	34±3	36±3	44±3
Platform Lower Speed (Full Load Lower Time)	25±3	27±3	28±3	30±3	38±3
Noise and Vibration Data					
Sound Pressure Level at Ground Control Station<70 dBA					
Sound Pressure Level at Platform Control Station<7 0 dBA					
Total Vibration Value to which the Hand/Arm System is Subjected Does not exceed 2.5 m/s²					
Maximum Root Mean Square Value of Weighted Acceleration to which the Whole Body is Subjected Does not exceed 0.5 m/s²					

Torque Specifications

Fastener Tightening Torque

Unless specific torque requirements are provided in this manual or other instructions, general tightening torques for metric fasteners shall conform to the table below.

Table 1 Fastener Tightening Torque — Metric

Nominal Diameter (mm)	Thread Pitch (mm)	Metric Grade 8.8	Metric Grade 10.9	Metric Grade 12.9
5	0.8	7 Nm (5 ft-lb)	9 Nm (7 ft-lb)	10 Nm (7 ft-lb)
6	1	12 Nm (9 ft-lb)	15 Nm (11 ft-lb)	18 Nm (13 ft-lb)
8	1.25	30 Nm (22 ft-lb)	35 Nm (26 ft-lb)	42 Nm (31 ft-lb)
	1	30 Nm (22 ft-lb)	37 Nm (27 ft-lb)	45 Nm (33 ft-lb)
10	1.5	55 Nm (41 ft-lb)	75 Nm (55 ft-lb)	85 Nm (63 ft-lb)
	1.25	56 Nm (41 ft-lb)	77 Nm (57 ft-lb)	87 Nm (64 ft-lb)
	1	60 Nm (44 ft-lb)	80 Nm (59 ft-lb)	92 Nm (68 ft-lb)
12	1.75	95 Nm (70 ft-lb)	125 Nm (92 ft-lb)	150 Nm (111 ft-lb)
	1.5	100 Nm (74 ft-lb)	130 Nm (96 ft-lb)	155 Nm (114 ft-lb)
	1.25	105 Nm (77 ft-lb)	135 Nm (100 ft-lb)	160 Nm (118 ft-lb)
14	2	150 Nm (110 ft-lb)	200 Nm (148 ft-lb)	230 Nm (170 ft-lb)
	1.5	165 Nm (122 ft-lb)	210 Nm (155 ft-lb)	250 Nm (184 ft-lb)
16	2	230 Nm (170 ft-lb)	300 Nm (221 ft-lb)	360 Nm (266 ft-lb)
	1.5	250 Nm (184 ft-lb)	320 Nm (236 ft-lb)	380 Nm (280 ft-lb)
18	2.5	320 Nm (236 ft-lb)	420 Nm (310 ft-lb)	500 Nm (369 ft-lb)
	1.5	360 Nm (266 ft-lb)	470 Nm (345 ft-lb)	550 Nm (406 ft-lb)
20	2.5	450 Nm (332 ft-lb)	600 Nm (443 ft-lb)	700 Nm (516 ft-lb)
	1.5	500 Nm (369 ft-lb)	650 Nm(479 ft-lb)	770 Nm (568 ft-lb)
22	2.5	600 Nm (443 ft-lb)	800 Nm (590 ft-lb)	980 Nm (723 ft-lb)
	2	650 Nm (479 ft-lb)	850 Nm (627 ft-lb)	1050 Nm (774 ft-lb)
24	3	750 Nm (553 ft-lb)	1050 Nm (774 ft-lb)	1250 Nm (923 ft-lb)
	2	800 Nm (590 ft-lb)	1100 Nm (811 ft-lb)	1300 Nm (959 ft-lb)
27	3	1150 Nm (848 ft-lb)	1500 Nm (1106 ft-lb)	1800 Nm (1327 ft-lb)
30	3.5	1500 Nm (1106 ft-lb)	2000 Nm (1475 ft-lb)	2400 Nm (1770 ft-lb)

Unless specific torque requirements are provided in this manual or other instructions, general tightening torques for SAE fasteners (Thread Series: UNC) shall conform to the table below.

Table 2 Fastener Tightening Torque — SAE (UNC)

Nominal Diameter (in)	Width Across Flats (s)	SAE Grade 5	SAE Grade 8
2001/4/20	7/16"	10 Nm (7 ft-lb)	14 Nm (10 ft-lb)
5/16-18	1/2"	21 Nm (15 ft-lb)	29 Nm (21 ft-lb)
2003/8/16	9/16"	37 Nm (27 ft-lb)	51 Nm (38 ft-lb)
7/16-14	5/8"	60 Nm (44 ft-lb)	82 Nm (60 ft-lb)
2001/2/13	3/4"	90 Nm (66 ft-lb)	130 Nm (96 ft-lb)
9/16-12	13/16"	130 Nm (96 ft-lb)	180 Nm (133 ft-lb)
2005/8/11	15/16"	178 Nm (131 ft-lb)	250 Nm (184 ft-lb)
2003/4/10	1-1/8"	315 Nm (232 ft-lb)	445 Nm (328 ft-lb)
2007/8/9	-	509 Nm (375 ft-lb)	715 Nm (527 ft-lb)

Unless specific torque requirements are provided in this manual or other instructions, general tightening torques for SAE fasteners (Thread Series: UNF) shall conform to the table below.

Table 3 Fastener Tightening Torque — SAE (UNF)

Nominal Diameter (in)	Width Across Flats (s)	SAE Grade 5	SAE Grade 8
2001/4/28	7/16"	11.5 Nm (8 ft-lb)	16 Nm (11 ft-lb)
5/16-24	1/2"	23 Nm (17 ft-lb)	32 Nm (24 ft-lb)
2003/8/24	9/16"	41 Nm (30 ft-lb)	58 Nm (43 ft-lb)
7/16-20	5/8"	65 Nm (48 ft-lb)	92 Nm (68 ft-lb)
2001/2/20	3/4"	100 Nm (74 ft-lb)	145 Nm (107 ft-lb)
9/16-18	13/16"	145 Nm (107 ft-lb)	200 Nm (148 ft-lb)
2005/8/18	15/16"	200 Nm (148 ft-lb)	280 Nm (207 ft-lb)
2003/4/16	1-1/8"	350 Nm (258 ft-lb)	495 Nm (365 ft-lb)
2007/8/14	-	560 Nm (413 ft-lb)	780 Nm (575 ft-lb)

When installing hydraulic hoses, they must be tightened to the torque values specified in the table below.

Table 4 Hydraulic Hose Torque

Metric Thread	L (Light Series)	S (Heavy Series)
M12 × 1.5	19 ± 1 Nm (14 ± 1 ft-lb)	
M14 × 1.5	26 ± 2 Nm (19 ± 2 ft-lb)	
M16 × 1.5	40 ± 3 Nm (30 ± 2 ft-lb)	
M18 × 1.5	50 ± 4 Nm (37 ± 3 ft-lb)	
M20 × 1.5	-	60 ± 4 Nm (44 ± 3 ft-lb)
M22 × 1.5	70 ± 5 Nm (52 ± 4 ft-lb)	-
M24× 1.5	-	85 ± 6 Nm (63 ± 4 ft-lb)
M26 × 1.5	90 ± 6 Nm (66 ± 4 ft-lb)	-
M30 × 2	120 ± 8 Nm (89 ± 6 ft-lb)	140 ± 10 Nm (103 ± 7 ft-lb)

M36 × 2	150 ± 12 Nm (111 ± 9 ft-lb)	180 ± 12 Nm (133 ± 9 ft-lb)
M42 × 2	-	260 ± 16 Nm (192 ± 12 ft-lb)
M45 × 2	240 ± 15 Nm (177 ± 11 ft-lb)	-
M52 × 2	250 ± 16 Nm (184 ± 12 ft-lb)	280 ± 18 Nm(207 ± 13 ft-lb)

When installing hydraulic fittings with metric threads, they must be tightened to the torque values specified in the table below.

Table 5 Hydraulic Fitting Torque — Metric

Thread Size	Mating Material: Aluminum	Mating Material: Steel	
	ED and O-Ring with Backup Ring	ED and O-Ring with Backup Ring	
L (Light Series)			
M10×1	18 ± 1 Nm(13 ± 1 ft-lb)	20 ± 2 Nm (15 ± 2 ft-lb)	18 ± 1 Nm (13 ± 1 ft-lb)
M12×1.5	30 ± 2 Nm (22 ± 2 ft-lb)	35 ± 2 Nm (26 ± 2 ft-lb)	30 ± 2 Nm (22 ± 2 ft-lb)
M14×1.5	42 ± 3 Nm (31 ± 2 ft-lb)	48 ± 4 Nm (35 ± 3 ft-lb)	35 ± 2 Nm (26 ± 2 ft-lb)
M16×1.5	55 ± 4 Nm (41 ± 3 ft-lb)	60 ± 4 Nm (44 ± 3 ft-lb)	40 ± 3 Nm (30 ± 3 ft-lb)
M18×1.5	75 ± 5 Nm (55 ± 4 ft-lb)	75 ± 5 Nm (55 ± 4 ft-lb)	45 ± 3 Nm (33 ± 4 ft-lb)
M22×1.5	90 ± 6 Nm (66 ± 4 ft-lb)	130 ± 8 Nm (96 ± 6 ft-lb)	60 ± 4 Nm(44 ± 3 ft-lb)
M27×2	120 ± 8 Nm (89 ± 6 ft-lb)	185 ± 12 Nm (136 ± 9 ft-lb)	100 ± 7 Nm (74 ± 5 ft-lb)
M30×2	140 ± 8 Nm (103 ± 6 ft-lb)	245 ± 15 Nm (181 ± 11 ft-lb)	135 ± 8 Nm (100 ± 6 ft-lb)
M33×2	180 ± 10 Nm (133 ± 7 ft-lb)	320 ± 20 Nm (236 ± 15 ft-lb)	160 ± 10 Nm(118 ± 7 ft-lb)
M42×2	240 ± 15 Nm (177 ± 11 ft-lb)	450 ± 25 Nm (332 ± 18 ft-lb)	210 ± 13 Nm (155 ± 10 ft-lb)
M48×2	280 ± 20 Nm (207 ± 15 ft-lb)	540 ± 30 Nm (398 ± 22 ft-lb)	260 ± 15 Nm (192 ± 11 ft-lb)
S (Heavy Series)			
M12×1.5	33 ± 2 Nm (24 ± 2 ft-lb)	43 ± 3 Nm (32 ± 2 ft-lb)	35 ± 2 Nm (26 ± 2 ft-lb)
M14×1.5	42 ± 3 Nm (31 ± 2 ft-lb)	50 ± 4 Nm (37 ± 3 ft-lb)	45 ± 3 Nm (33 ± 2 ft-lb)
M16×1.5	55 ± 4 Nm (41 ± 3 ft-lb)	75 ± 5 Nm (55 ± 4 ft-lb)	55 ± 4 Nm (41 ± 3 ft-lb)
M18×1.5	75 ± 5 Nm (55 ± 4 ft-lb)	95 ± 6 Nm (70 ± 4 ft-lb)	70 ± 5 Nm (52 ± 4 ft-lb)
M22×1.5	90 ± 6 Nm (66 ± 4 ft-lb)	140 ± 8 Nm(103 ± 6 ft-lb)	100 ± 10 Nm (74 ± 7 ft-lb)
M27×2	120 ± 8 Nm (89 ± 6 ft-lb)	185 ± 12 Nm (136 ± 9 ft-lb)	160 ± 10 Nm (118 ± 7 ft-lb)
M30×2	140 ± 8 Nm (103 ± 6 ft-lb)	245 ± 15 Nm (181 ± 11 ft-lb)	210 ± 13 Nm (155 ± 10 ft-lb)
M33×2	180 ± 10 Nm (133 ± 7 ft-lb)	320 ± 20 Nm (236 ± 15 ft-lb)	260 ± 15 Nm (192 ± 11 ft-lb)
M42×2	240 ± 15 Nm (177 ± 11 ft-lb)	450 ± 25 Nm (332 ± 18 ft-lb)	330 ± 20 Nm (243 ± 15 ft-lb)
M48×2	280 ± 20 Nm (207 ± 15 ft-lb)	540 ± 30 Nm (398 ± 22 ft-lb)	420 ± 25 Nm (310 ± 18 ft-lb)

When installing hydraulic fittings with BSP threads, they must be tightened to the torque values specified in the table below.

Table 6 Hydraulic Fitting Torque — Imperial (BSP)

Thread Size	Mating Material: Aluminum	Mating Material: Steel	
	ED and O-Ring with Backup Ring	ED and O-Ring with Backup Ring	
S (Heavy Series)			
G1/8A	20 ± 1 Nm (15 ± 1 ft-lb)	20 ± 1 Nm (15 ± 1 ft-lb)	-
G1/4A	35 ± 2 Nm (26 ± 2 ft-lb)	40 ± 2 Nm (30 ± 2 ft-lb)	-
G3/8A	50 ± 3 Nm (37 ± 2 ft-lb)	75 ± 5 Nm (55 ± 2 ft-lb)	-
G1/2A	75 ± 5 Nm (55 ± 2 ft-lb)	95 ± 6 Nm (70 ± 4 ft-lb)	-
G3/4A	120 ± 8 Nm (89 ± 6 ft-lb)	185 ± 12 Nm (136 ± 9 ft-lb)	-
G1A	180 ± 10 Nm (133 ± 7 ft-lb)	320 ± 20 Nm (236 ± 15 ft-lb)	-
G1-1/4A	240 ± 15 Nm (177 ± 11 ft-lb)	450 ± 25 Nm (332 ± 18 ft-lb)	-
G1-1/2A	280 ± 20 Nm (207 ± 15 ft-lb)	540 ± 30 Nm (398 ± 22 ft-lb)	-
S (Heavy Series)			
G1/4A	40 ± 3 Nm (30 ± 2 ft-lb)	43 ± 3 Nm (32 ± 2 ft-lb)	-
G3/8A	55 ± 3 Nm (41 ± 2 ft-lb)	85 ± 5 Nm (63 ± 4 ft-lb)	-
G1/2A	80 ± 5 Nm (59 ± 4 ft-lb)	120 ± 8 Nm (89 ± 6 ft-lb)	-
G3/4A	120 ± 8 Nm (89 ± 6 ft-lb)	185 ± 12 Nm (136 ± 9 ft-lb)	-
G1A	180 ± 10 Nm (133 ± 7 ft-lb)	320 ± 20 Nm (236 ± 15 ft-lb)	-
G1-1/4A	240 ± 15 Nm (177 ± 11 ft-lb)	450 ± 25 Nm (332 ± 18 ft-lb)	-
G1-1/2A	280 ± 20 Nm (207 ± 15 ft-lb)	540 ± 30 Nm (398 ± 22 ft-lb)	-

When installing hydraulic fittings with UNC/UNF threads, they must be tightened to the torque values specified in the table below.

Table 7 Hydraulic Fitting Torque — SAE (UNC/UNF)

Thread Size	Mating Material: Aluminum	Mating Material: Steel
	O-Ring Seal	O-Ring Seal
S (Heavy Series)		
7/16-20	21 ± 2 Nm (15 ± 2 ft-lb)	21 ± 2 Nm (15 ± 2 ft-lb)
9/16-18	34 ± 2 Nm (25 ± 2 ft-lb)	35 ± 2 Nm (26 ± 2 ft-lb)
11/16-12	40 ± 3 Nm (30 ± 2 ft-lb)	50 ± 4 Nm (37 ± 3 ft-lb)
2003/4/16	50 ± 3 Nm (37 ± 2 ft-lb)	65 ± 4 Nm (48 ± 3 ft-lb)
2007/8/14	75 ± 5 Nm (55 ± 4 ft-lb)	110 ± 8 Nm (81 ± 6 ft-lb)
1-1/16-12	110 ± 8 Nm (81 ± 6 ft-lb)	140 ± 10 Nm (103 ± 7 ft-lb)
1-5/16-12	160 ± 10 Nm (118 ± 7 ft-lb)	210 ± 15 Nm (155 ± 11 ft-lb)
S (Heavy Series)		
7/16-20	21 ± 2 Nm (15 ± 2 ft-lb)	23 ± 2 Nm (17 ± 2 ft-lb)
9/16-18	34 ± 2 Nm (25 ± 2 ft-lb)	40 ± 3 Nm (30 ± 2 ft-lb)
11/16-12	40 ± 3 Nm (30 ± 2 ft-lb)	65 ± 4 Nm (48 ± 3 ft-lb)
2003/4/16	50 ± 3 Nm (37 ± 2 ft-lb)	80 ± 6 Nm (59 ± 4 ft-lb)
2007/8/14	75 ± 5 Nm(55 ± 4 ft-lb)	125 ± 10 Nm (92 ± 7 ft-lb)
1-1/16-12	110 ± 8 Nm (81 ± 6 ft-lb)	185 ± 15 Nm (136 ± 11 ft-lb)
1-5/16-12	160 ± 10 Nm (118 ± 7 ft-lb)	280 ± 20 Nm (207 ± 15 ft-lb)

Scheduled Maintenance Procedures



Compliance and Adherence:

☐Maintenance inspections shall be completed by personnel trained and qualified to perform maintenance on this machine.

☐Scheduled maintenance inspections shall be completed daily, quarterly, and annually as specified in the Maintenance Inspection Report. The frequency and extent of periodic inspections and tests may also be dictated by national/regional regulations.

⚠WARNING Failure to perform each procedure as presented and at the specified intervals could result in death, serious injury, or substantial property damage.

☐Damaged or malfunctioning machines shall be immediately tagged out of service and removed from operation.

☐Any machine damage or malfunction shall be repaired prior to operating the machine.

☐Use only approved replacement parts.

☐Machines that have been out of service for more than three months must complete a quarterly inspection.

Machine Configuration Requirements:

☐Unless otherwise specified, the machine shall be in the following configuration when performing each procedure:

- Machine is parked on a firm, level surface
- Key switch is in the OFF position with key removed
- Both ground control station and platform control station red Emergency Stop buttons are in the OFF position
- Wheel Brake Engaged
- All external AC power is disconnected from the machine
- Platform is in the stowed position

About This Section

This section contains detailed procedures for each scheduled maintenance inspection.

Each procedure includes a description, safety warnings, and step-by-step instructions.

Symbol Legend



Safety Alert Symbol — Used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

Indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Indicates the correct, expected result after performing a series of steps.

Indicates an incorrect result has occurred after performing a series of steps.

Maintenance Symbol Legend

Note: The following symbols are used in this manual to help convey the intent of the instructions. When one or more symbols appear at the beginning of a maintenance procedure, their meanings are as follows:



Indicates that tools are required to perform this procedure.



Indicates that new parts are required to perform this procedure.



Indicates that dealer service is required to perform this procedure.



Indicates that a cold motor or cold pump is required to perform this procedure.

Pre-Delivery Preparation Report

The Pre-Delivery Preparation Report contains checklists for each type of scheduled inspection. Make a copy of the report for each inspection and retain completed forms as required.

Maintenance Schedule

The Scheduled Maintenance Procedures section and the Maintenance Inspection Report are divided into subsections. Use the table below to determine which procedure group or groups must be completed to perform a scheduled inspection.

Inspection Type	Checklist
Daily (or Every 8 Hours)	A
Quarterly (or Every 250 Hours)	A + B
Annually (or Every 1000 Hours)	A + B + C

Maintenance Inspection Report

The Maintenance Inspection Report contains checklists for each type of scheduled inspection. Make a copy of the Maintenance Inspection Report for each inspection performed. Completed forms shall be retained for a minimum of 4 years, or in accordance with employer, worksite, and governmental regulations and requirements.

Pre-Delivery Preparation Report

General Requirements

It is the responsibility of the owner or dealer to perform the pre-delivery preparation.

The pre-delivery preparation shall be completed prior to each delivery. This inspection is intended to identify any apparent issues with the machine before it is placed into service.

Damaged or altered machines shall not be placed into service. If a machine is found to be damaged or shows any deviation from its as-delivered condition from the factory, the machine must be tagged out of service and removed from operation.

Repairs to the machine shall only be performed by qualified service technicians in accordance with manufacturer specifications.

Scheduled maintenance inspections shall be performed by qualified service technicians in accordance with manufacturer specifications and the requirements set forth in this manual.

Operating Instructions

Use the Operator's Manual provided with the machine.

The pre-delivery preparation consists of completing: Pre-operation Inspection, Maintenance Items, and Function Tests.

Use this form to record inspection results. Check the appropriate box as each item is completed. Follow the instructions provided in the Operator's Manual to perform each item.

If any inspection item results in an "N" (Fail), immediately remove the machine from service, perform repairs, and re-inspect. After repairs are completed, check the "R" (Repaired) box.

Legend

Y = Yes, Acceptable

N = No, Remove from Service

R = Repaired

Remarks

Item	Y	N	R
Pre-operation Inspection Completed			
Maintenance Items Completed			
Function Tests Completed			

Model
Serial Number
Date
Machine Owner
Inspector (Print Name)
Inspector Signature
Inspector Title
Inspector Company

Maintenance Inspection Report

Model
Serial Number
Date
Machine Owner
Inspector (Print Name)
Inspector Signature
Inspector Title
Inspector Company

Instructions

- Make a copy of this report for each inspection to be performed.
- Select the appropriate checklist based on the type of inspection to be conducted.

Inspection Type	Checklist
Daily (or Every 8 Hours)	A
Quarterly (or Every 250 Hours)	A + B
Annually (or Every 1000 Hours)	A + B + C

- Check the appropriate box as each inspection procedure is completed.
- Use the step-by-step procedures in this section to learn how to perform these inspections.
- If any inspection item results in an "N" (Fail), tag the machine out of service, perform repairs, and re-inspect. After repairs are completed, check the "R" (Repaired) box.

Y = Yes, Acceptable

N = No, Remove from Service

R = Repaired

Checklist A

Item	Inspection Item	Y	N	R
A-1	Inspect manuals and decals			
A-2	Pre-operation inspection			
A-3	Function tests			
A-4	Damaged, loose, or missing parts			
A-5	Hydraulic leaks			
A-6	Check hydraulic oil level			
A-7	Auxiliary lowering			
A-8	Manual lowering			
A-9	Mast Column			
A-10	Cable			
A-11	Interlock system			
A-12	Power and function controls			
A-13	Lift chains and sheaves			
A-14	Breather cap			

Checklist B

Item	Inspection Item	Y	N	R
B-1	Batteries			
B-2	Electrical wiring			
B-3	Welds			
B-4	Tilt-back operation			
B-5	Lift chain adjustment			
B-6	Clean and lubricate mast columns			
B-7	Lifting capacity			
B-8	Cable			
B-9	Outrigger length correct			
B-10	Outrigger pads			

Checklist C

Item	Inspection Item	Y	N	R
C-1	Casters and wheels			
C-2	Mast assembly			
C-3	Lift chains			
C-4	Hydraulic oil			
C-5	Auxiliary platform lowering battery			

Remarks

Checklist A Procedures

A-1 Inspect Manuals and Decals

This procedure is required every 8 hours or daily, whichever comes first, in accordance with specifications.

Maintaining the Operator's Manual and Safety Manual in legible and intact condition is essential to the safe operation of the machine. Each machine is shipped from the factory with manuals, which shall be stored in the manual box provided on the platform. Illegible or missing manuals will fail to provide the safety and operational information necessary for safe operation.

Additionally, maintaining all safety and instructional decals in legible and intact condition is mandatory for safe machine operation. Decals are used to alert operators and personnel to various potential hazards associated with using this equipment, as well as to provide operational and maintenance information. Illegible decals will fail to alert personnel to specific procedures or hazards, which may result in unsafe operating conditions.

1 Inspect to verify that the Operator's Manual and Safety Manual are present and stored in the platform manual box.

2 Inspect the pages of each manual to ensure they are legible and in good condition.

⊙Result 1: The Operator's Manual corresponds to the machine model, and all manuals are legible and in good condition.

⊠Result 2: The Operator's Manual does not correspond to the machine model, or the manuals are in poor condition or illegible. Remove the machine from service until new manuals are replaced.

3 Turn to the decal inspection section in the Operator's Manual. Carefully and thoroughly inspect all decals on the machine for legibility and condition.

⊙Result 1: The machine is equipped with all required decals, and all decals are legible and in good condition.

⊠Result 2: The machine is not equipped with all required decals, or one or more decals are illegible or in poor condition. Remove the machine from service until new decals are replaced.

4 Always return the manuals to the manual box after use.

Note: Contact your authorized dealer or company if replacement manuals or decals are required.

A-2 Perform Pre-operation Inspection

This procedure is required every 8 hours or daily, whichever comes first, in accordance with specifications.

Completing the pre-operation inspection is essential to the safe operation of the machine. The pre-operation inspection is a visual inspection performed by the operator at the beginning of each work shift. This inspection is intended to identify any apparent abnormalities with the machine before the operator performs function tests. The pre-operation inspection also serves to determine whether routine maintenance procedures are required.

For complete information on performing this procedure, refer to the corresponding Operator's Manual. Reference the Operator's Manual provided with your machine.

A-3 Perform Function Tests

This procedure is required every 8 hours or daily, whichever comes first, in accordance with specifications.

Completing function tests is essential to the safe operation of the machine. Function tests are intended to discover any malfunctions before the machine is placed into service. Machines with malfunctions shall not be used. If a malfunction is discovered, the machine must be tagged out and removed from service.

For complete information on performing this procedure, refer to the corresponding Operator's Manual. Reference the Operator's Manual provided with your machine.

A-4 Inspect for Damage and Loose or Missing Parts

This procedure is required every 8 hours or daily, whichever comes first, in accordance with specifications.

Daily inspection of the machine's condition is essential to the safe operation and proper performance of the machine. Failure to identify and repair damage, as well as failure to identify loose or missing parts, may result in unsafe operating conditions.

1 Inspect the entire machine for damage, improperly installed parts, or missing parts, including:

- Electrical components, wiring, and cables
- Cable anchors and pulleys
- Hydraulic power unit, hoses, fittings, cylinders, and manifold blocks
- Sequencing cables, anchors, and pulleys
- Lift chains and tensioning sheaves
- Adjustable wear pads (guide shoes)
- Mast columns and counterweights
- Mast guards
- Nuts, bolts, and other fasteners
- Platform entry mid-rail or gate
- Hydraulic Tank Breather Cap
- Dents or damage to the machine
- Corrosion or oxidation
- Cracks in welds or structural members
- Outriggers and outrigger pads
- Chains and sprockets

A-5 Inspect for Hydraulic Leaks

This procedure is required every 8 hours or daily, whichever comes first, in accordance with specifications.

Detecting hydraulic oil leaks is essential for operational safety and proper machine performance. Undetected leaks may develop into hazardous conditions, impair machine functions, and cause damage to machine components.

1 Inspect the following areas for evidence of hydraulic oil accumulation, drips, or residue on or around surfaces:

- Hydraulic power unit — tank, valves, fittings
- Flow control valve
- Ground area beneath the machine
- Hydraulic hoses and fittings
- Hydraulic cylinders

A-6 Check Hydraulic Oil Level

This procedure is required every 8 hours or daily, whichever comes first, in accordance with specifications.

Maintaining hydraulic oil at the proper level is essential to machine operation. Improper hydraulic oil level can damage hydraulic components. Daily inspection allows the inspector to identify changes in oil level that may indicate a problem with the hydraulic system.

1 Ensure the platform is fully lowered.

2 Remove the fasteners securing the hydraulic power unit cover.

3 Remove the power unit cover.

4 Open the threaded cap on the top of the hydraulic tank and check the hydraulic oil level using the dipstick attached to the underside of the cap.

- Result: The hydraulic oil level shall be at the middle of the dipstick.

5 Add hydraulic oil as needed. Do not overfill.

6 Reinstall the cover.

A-7 Test Auxiliary Platform Lowering Operation--AC Models

This procedure is required every 8 hours or daily, whichever comes first, in accordance with specifications.

The auxiliary platform lowering function is powered by the auxiliary battery pack located inside the ground control box. The auxiliary platform lowering function may be activated from either the ground controls or the platform controls. Detecting malfunctions in the auxiliary lowering function is essential to the safe operation of the machine. An unsafe operating condition exists if the auxiliary platform lowering function fails to operate when primary power is lost.

1 Raise the platform slightly.

2 Disconnect machine power.

3 Do not engage any Emergency Stop buttons. (Keep all Emergency Stop buttons in the ON/RUN position.)

4 Press the platform down button on the platform controller.

- Result: The platform shall lower.

A-8 Test Manual Platform Lowering Operation

This procedure is required every 8 hours or daily, whichever comes first, in accordance with specifications.

Detecting malfunctions in the manual lowering function is essential to the safe operation of the machine. An unsafe operating condition exists if the manual lowering function fails to operate when both primary power and auxiliary power are lost.

1 Raise the platform slightly.

2 Activate the manual lowering valve located at the base of the hydraulic cylinder.

⊙Result: The platform shall lower.

A-9 Inspect Mast Columns for Damage

This procedure is required every 8 hours or daily, whichever comes first, in accordance with specifications.

Detecting mast column damage is essential to the safe operation of the machine. An unsafe operating condition exists if mast columns are damaged and operation is not smooth, exhibiting sticking and binding. Daily inspection of the mast columns allows the inspector to identify changes in the operating condition of the mast assembly that may indicate damage.

1 Visually inspect each mast column for the following:

- Dents, gouges, or abrasions
- Bending or warping
- Excessive wear

2 Cycle the platform through one full raise and lower cycle.

⊙Result: The platform shall raise and lower smoothly, without sticking or binding.

A-10 Inspect Sequencing Cables

This procedure is required every 8 hours or daily, whichever comes first, in accordance with machine specifications.

Detecting damage to sequencing cables or components is essential for safe machine operation. An unsafe operating condition exists if the sequencing components are damaged and do not operate smoothly. Daily inspection of the sequencing system allows the inspector to identify changes in operating condition that may indicate damage.

1 Visually inspect the cables and components for the following:

- Frayed or broken wire strands
- Kinked cables
- Corrosion
- Paint or foreign material buildup
- Cracked or broken sheaves
- Abnormal or excessive sheave wear
- Cracked or damaged threaded swage ends

2 Verify the following:

- Cables are properly seated on sheaves
- Upper and lower cable ends are properly secured
- Upper and lower mounting brackets are securely fastened

A-11 Inspect Interlock System for Proper Operation

This procedure is required every 8 hours or daily, whichever comes first, in accordance with specifications.

Testing the interlock system for malfunctions is essential to the safe operation of the machine. An unsafe operating condition exists if any interlock indicator light fails to operate properly.

1 Turn the key switch to the ground control position and pull out the red Emergency Stop button to the ON position. Twist to release the red Emergency Stop button on the platform controller.

⊙Result (AC/DC models): Power shall turn on.

2 Slide each outrigger into the base receiver socket until the outrigger lock pin snaps into place. Adjust the outriggers using the outrigger screw jacks to level the machine until the base casters are slightly off the ground.



3 Check the interlock indicator lights on the ground controller.

⊙Result: Verify that the corresponding indicator light illuminates.

4 Repeat steps 2 and 3 for each remaining outrigger.

5 Check that the level sensor is level.

A-12 Test Power and Function Controls

This procedure is required every 8 hours or daily, whichever comes first, in accordance with specifications.

Testing machine functions and Emergency Stop buttons for malfunctions is essential to the safe operation of the machine. An unsafe operating condition exists if any function fails to operate properly, or if either red Emergency Stop button fails to stop all machine functions. All functions shall operate smoothly, without sticking, juddering, or abnormal noise.

1 Install outriggers and level the machine.

Note: Verify that the interlock indicator lights are illuminated.

2 Turn the key switch to the ground control position and pull out the red Emergency Stop button to the ON position. Twist to release the red Emergency Stop button on the platform controller.

⊙Result: The power indicator light shall illuminate.

3 Press the control activation button and rotate the lift/lower switch to the UP position, then to the DOWN position.

⊙Result: The platform lift/lower function shall operate.

4 Press the red Emergency Stop button on the platform controller to the OFF position.

5 Press the control activation button and rotate the lift/lower switch to the UP position, then to the DOWN position.

⊙Result: The lift/lower function shall not operate.

6 Press both the platform controller and ground controller red Emergency Stop buttons to the OFF position.

7 Press the control activation button and rotate the lift/lower switch to the UP position, then to the DOWN position.

⊙Result: The lift/lower function shall not operate.

A-13 Inspect Lift Chains and Tensioning Sheaves

This procedure is required every 8 hours or daily, whichever comes first, in accordance with specifications.

Maintaining lift chains and tensioning sheaves in good condition is essential to the safe operation of the machine. Failure to identify and replace damaged chains or tensioning sheaves may result in unsafe operating conditions and could cause component damage.

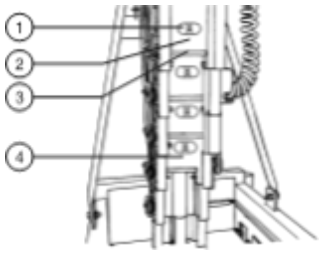
1 Raise the platform approximately 3 ft (approx. 1 m).

2 Visually inspect the chains and tensioning sheaves near the top of each mast column for the following:

- Excessive corrosion
- Broken or missing link plates and pins
- Tight or kinked chain joints
- Missing or damaged tensioning sheaves and related components

3 Inspect the chain anchor points near the bottom of each mast column. Verify that a lock nut is installed at each anchor point.

4 Inspect the chain anchor points near the bottom of each mast column. Verify that the chain tensioning bracket is centered in the inspection hole.



1 Chain Tensioning Bracket
2 Adjustment Nut (not visible in view)
3 Anchor Rod (not visible in view)
4 Mast Column

A-14 Inspect Hydraulic Tank Breather Cap

This procedure is required every 8 hours or daily, whichever comes first, in accordance with specifications.

The hydraulic tank is vented to the atmosphere through a breather cap. The breather cap contains an internal air filter element that may become clogged and cause abnormal power unit operation. If the breather cap is not properly installed and inspected daily, contaminants may enter the hydraulic system, resulting in component damage.

1 Ensure the breather cap is installed on the hydraulic power unit tank and is free of damage. Do not remove it.

Checklist B Procedures

B-1 Inspect the Batteries

This procedure is required every 250 hours or quarterly, whichever comes first, in accordance with specifications.

Maintaining the batteries in good condition is essential for machine performance and safe operation. Improper fluid levels or damaged cables and connections can result in component damage and hazardous conditions.

Electrocution/Burn Hazard.

⚠WARNING Contact with live circuits could result in death or serious injury. Remove all rings, watches, and other jewelry.

1 Wear protective clothing and eye protection.

2 Verify that battery cable connections are tight and free of corrosion.

Note: Applying terminal protectant and anti-corrosion sealant helps prevent corrosion of battery terminals and cables.

3 Check the battery acid level. If necessary, add distilled water to the bottom of the battery fill tube. Do not overfill.

4 Install the battery vent caps.

B-2 Inspect Electrical Wiring

This procedure is required every 250 hours or quarterly, whichever comes first, in accordance with specifications.

Maintaining electrical wiring in good condition is essential for safe operation and proper machine performance. Failure to identify and replace burned, chafed, corroded, pinched, or loose wires may result in unsafe operating conditions and could cause component damage.

Electrocution/Burn Hazard.

⚠WARNING Contact with live circuits could result in death or serious injury. Remove all rings, watches, and other jewelry.

1 Inspect the following areas for burned, chafed, corroded, pinched, and loose wires:

- All base wiring
- Inside the ground control box
- Hydraulic power unit
- All external cables
- DC models: Battery pack
- AC power cord

B-3 Inspect All Welds

This procedure is required every 250 hours or quarterly, whichever comes first, in accordance with specifications.

Weld inspection is essential for the safe operation and proper performance of the machine. Failure to identify and repair damage may result in unsafe operating conditions.

1 Visually inspect the welds in the following areas:

- Platform
- Base
- Mast column support mounting brackets
- Loading pivot bar
- Outrigger storage receivers
- Tilt-back frame (if equipped)
- Tilt-back frame mounting brackets (if equipped)
- Outrigger pads
- Power drive assist (if equipped)

B-4 Test Tilt-Back Operation (If Equipped)

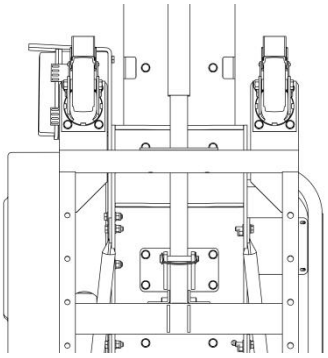
This procedure is required every 250 hours or quarterly, whichever comes first, in accordance with specifications.

The tilt-back frame is standard equipment on GTWY1-12 models. The tilt-back frame allows the machine to be pushed through standard doorways. Failure to detect abnormal tilt-back operation may result in unsafe operating conditions and could cause personal injury and component damage.

1 Fully lower the platform to the stowed position.

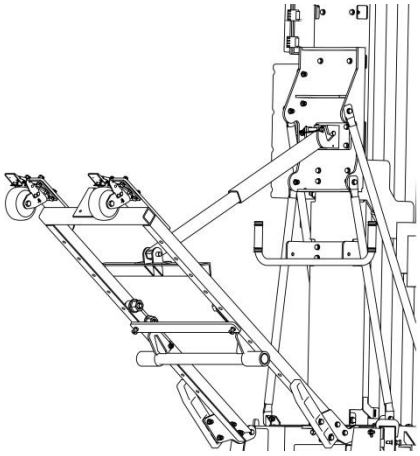
2 Remove the outriggers from the base and place them into the storage receivers.

3 Firmly grasp the tilt-back frame and remove the retaining pin.



4 Lower the tilt-back frame and guide the tilt-back support bar into the support bar receiver.

5 Insert the retaining pin through the support bar receiver.



⚠WARNING **Crushing Hazard. The machine will tip over if the retaining pin is not locked into the support bar receiver.**

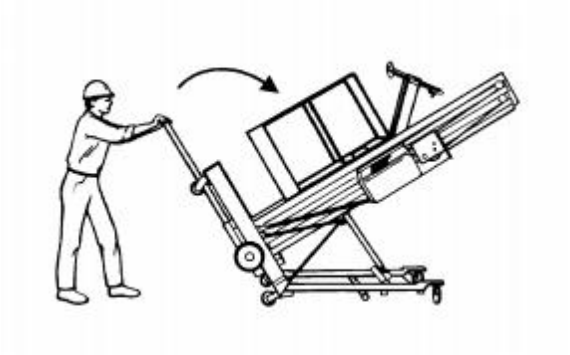
6 Slide the T-handle out until the lock pin snaps into the locked position.

⚠WARNING **Crushing Hazard. The machine may tip over if the T-handle lock pin is not locked into the base.**

7 Using the T-handle, raise the machine to the intermediate tilt-back position (casters on the tilt-back frame contact the ground and the machine is supported by the extended tilt-back support bar). Use an appropriate number of personnel and proper lifting techniques.



8 Continue raising until the telescoping tilt-back support bar is fully compressed.



9 Return the machine to the upright position. Carefully pull down on the T-handle until the machine rests in the intermediate tilt-back position.

10 Using the T-handle, lower the machine until the base casters contact the ground. Use an appropriate number of personnel and proper lifting techniques.

11 Retract the sliding T-handle to the stowed position.

12 Return the tilt-back frame to the upright stowed position and insert the retaining pin.

B-5 Check Lift Chain Tension

This procedure is required every 250 hours or quarterly, whichever comes first, in accordance with specifications.

Maintaining proper lift chain tension is essential for the safe operation of the machine. Failure to maintain proper chain tension may result in unsafe operating conditions and could cause component damage.

1 Fully lower the platform to the stowed position.

2 Measure the highest point of the machine.

Note: If the measurement does not meet specification, chain adjustment is required.

3 Measure the distance between the top of the base frame and the bottom edge of the platform.

⊙Result: The measurement shall be no less than the specified value.

Note: If the measurement does not meet specification, chain adjustment is required.

Specifications		
Model	Height	Measurement (Step 2)
GTWY1-6AC	78.35 in	4.72 in
	199 cm	12 cm
GTWY1-6DC	78.35 in	5.91 in
	199 cm	15 cm
GTWY1-8AC	78.35 in	4.72 in
	199 cm	12 cm
GTWY1-8DC	78.35 in	5.91 in
	199 cm	15 cm
GTWY1-9AC	78.35 in	4.72 in
	199 cm	12 cm
GTWY1-9DC	78.35 in	5.91 in
	199 cm	15 cm
GTWY1-10AC	78.35 in	4.72 in
	199 cm	12 cm
GTWY1-10DC	78.35 in	5.91 in
	199 cm	15 cm
GTWY1-12AC	109.45 in	4.72 in
	278 cm	12 cm
GTWY1-12DC	109.45 in	5.91 in
	278 cm	15 cm

B-6 Clean and Lubricate Mast Columns

This procedure is required every 250 hours or quarterly, whichever comes first, in accordance with specifications.

Clean and properly lubricated mast columns are essential for proper machine performance and safe operation. More frequent cleaning and lubrication of the mast columns may be required in extremely dirty operating environments.

1 Raise the platform to the maximum height.

2 Visually inspect the inner and outer guide channels of each mast column for debris or foreign material. If necessary, clean the mast columns using a mild cleaning solvent.

⚠WARNING Personal Injury Hazard. This procedure requires the use of additional access equipment. Do not place or lean ladders or scaffolds against any part of the machine. Performing this procedure without the proper skills and tools could result in death or serious injury. Dealer service is strongly recommended.

3 If necessary, apply a generous amount of grease to the inner and outer guide channels of each mast column.

B-7 Test Lifting Capacity

This procedure is required every 250 hours or quarterly, whichever comes first, in accordance with specifications.

Proper lifting capacity is essential for the safe operation of the machine. Improperly adjusted lifting capacity may result in machine overload and could cause death or serious injury.

⚠WARNING Personal Injury Hazard. This procedure requires specific repair skills, lifting equipment, and a suitable workshop. Attempting to perform this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

1 Place the maximum rated load into the platform. Secure the load to the platform.

Note: Refer to the Operator's Manual or the load decal on the machine for the maximum load capacity.

2 Raise the platform slightly.

⊙Result: The hydraulic power unit shall raise the platform.

3 Fully lower the platform.

4 Add additional weight to the platform equal to, but not exceeding, 20% of the maximum rated load. Secure the additional weight. Refer to the machine data plate.

5 Raise the platform slightly.

⊙Result: The hydraulic power unit shall not raise the platform.

Note: If the hydraulic power unit fails to lift the rated load, or lifts weight exceeding the rated load, refer to the repair procedure Valve Adjustments.

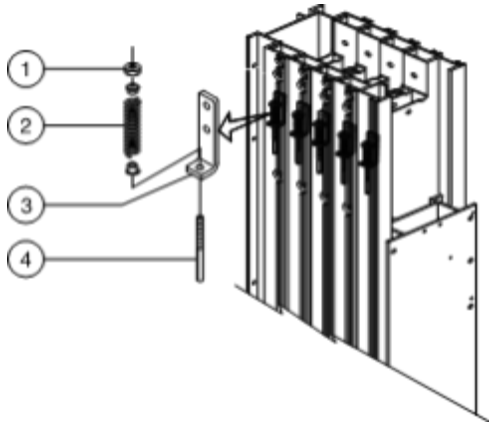
B-8 Adjust Sequencing Cables

This procedure is required every 250 hours or quarterly, whichever comes first, in accordance with specifications.

Maintaining proper sequencing cable tension is essential for the safe operation of the machine. An unsafe operating condition exists if the sequencing cables are improperly adjusted. Daily inspection of the sequencing cables allows the inspector to identify changes in operating condition that may indicate damage.

1 Fully lower the platform.

2 Verify proper sequencing cable deflection by checking the spring compression. The spring is located between the nylon lock nut and the upper sequencing bracket.



1 Nylon Lock Nut
2 Spring
3 Upper Sequencing Bracket
4 Sequencing Cable

3 Compress the spring to 15/16 in (approx. 2.4 cm). Turn the nylon lock nut clockwise to increase spring compression, or counterclockwise to decrease spring compression.

NOTICE **Component Damage Hazard. Do not exceed the recommended spring compression.**

4 Verify the spring measurement for each sequencing cable.

5 Cycle the platform through three full raise and lower cycles and verify the spring compression.

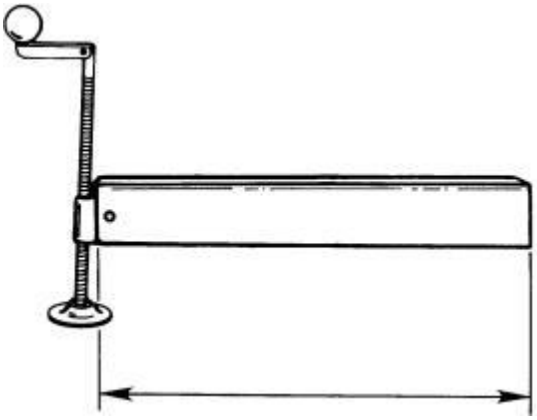
6 Repeat adjustment for each cable as necessary.

B-9 Check Outrigger Length for Correctness

This procedure is required every 250 hours or quarterly, whichever comes first, in accordance with specifications.

Proper outrigger length is essential for the safe operation of the machine. Operating the machine with outriggers that do not match the original factory design for this model will result in death or serious injury.

1 Measure each outrigger and verify that the length is correct.



Model	
GTWY1-6	29.53 in
	750mm
GTWY1-8	29.53 in
	750mm
GTWY1-9	39.37 in
	1000mm
GTWY1-10	39.37 in
	1000mm
GTWY1-12	47.24 in
	1200mm

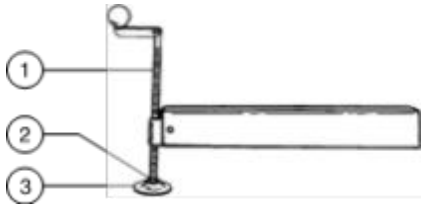
B-10 Inspect and Lubricate Outrigger Leveling Jack Pads

This procedure is required every 250 hours or quarterly, whichever comes first, in accordance with specifications.

Detecting abnormal wear on leveling jack pads is essential for the safe operation of the machine. Improper lubrication and/or damaged pads may result in unsafe conditions.

1 Visually inspect the leveling jack pads for abnormal wear.

2 Apply a generous amount of grease to the pad pivot point and the leveling jack threads.



1 Outrigger Leveling Jack Threads
2 Outrigger Pad Pivot Point
3 Outrigger Pad

Checklist C Procedures

C-1 Inspect and Lubricate Casters and Wheels

This procedure is required every 1000 hours or annually, whichever comes first, in accordance with specifications.

More frequent inspection and lubrication of casters and wheels may be required in extremely dirty operating environments.

1 Visually inspect each caster and wheel for cuts, cracks, or abnormal wear.

2 Push the machine on a flat, smooth surface and check that casters and wheels roll smoothly.

3 Pump grease into the grease fitting on each caster and wheel until grease just begins to seep from the bearing seal gap.

C-2 Inspect Mast Assembly for Wear

This procedure is required every 1000 hours or annually, whichever comes first, in accordance with specifications.

Detecting excessive or abnormal wear on the mast assembly is essential for the safe operation of the machine. An unsafe operating condition exists if the mast assembly is excessively worn, or if operation is not smooth and exhibits sticking and binding.

1 Remove the mast guards.

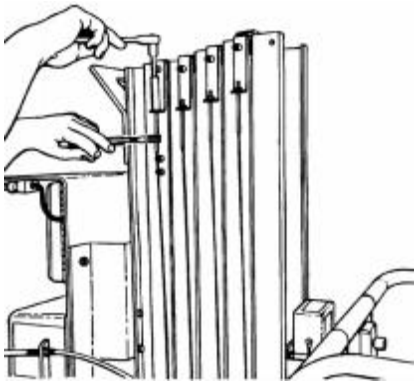
2 Raise the platform until 3 to 5 in (approx. 7.6 to 12.7 cm) of each mast column is exposed.

3 Visually inspect the gap between the top rollers of each mast column and the adjacent mast column surface.

- Result: The distance between the roller and the mast columns on both sides shall be equal.

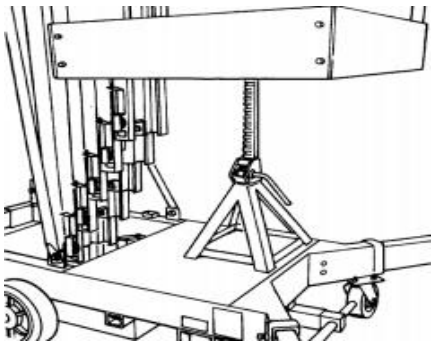
Note: If mast column inspection measurements do not meet specification, refer to the repair procedure How to Adjust Wear Pads.

4 Loosen, but do not remove, the sequencing cable adjustment nuts located at the top of the first mast column section.



5 Raise the platform to approximately 3 ft (approx. 1 m) above the top of the base.

6 Place a jack stand on top of the base, centered beneath the platform. Adjust the jack stand to a height of 24 in (approx. 61 cm).

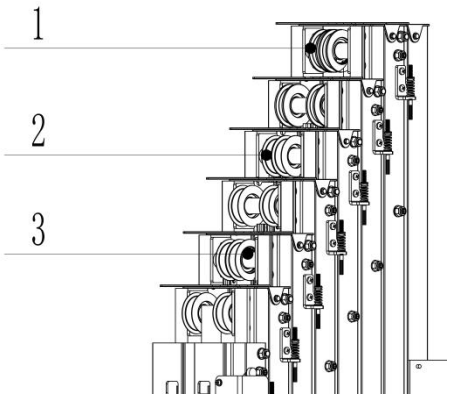


7 Lower the platform onto the jack stand just enough to relieve the load from the lift chains.

⚠WARNING **Crushing Hazard. Keep clear of the platform while it is lowering.**

8 Inspect each tensioning sheave for the following:

- Excessive side flange wear
- Abnormal wear
- Side-to-side movement exceeding 0.079 in (approx. 2 mm)
- Any front-to-back movement



1 Chain
2 Sheave
3 Spacer

Note: If tensioning sheave inspection measurements do not meet specification, the sheave spacer requires replacement. Refer to the repair procedure How to Assemble the Mast.

9 Raise the platform, remove the jack stand and support blocks. Then lower the platform.

10 Install the mast guards and adjust the sequencing cables. Refer to the maintenance procedure Adjust Sequencing Cables.

C-3 Inspect and Lubricate Lift Chains

This procedure is required every 1000 hours or annually, whichever comes first, in accordance with specifications.

Properly lubricated chains are essential for proper machine performance and safe operation. More frequent cleaning and lubrication of the chains may be required in extremely dirty operating environments.

1 Raise the platform to the maximum height.

2 Inspect each lift chain. Refer to the repair procedure How to Inspect Lift Chains.

3 Lubricate each chain using a dry-type spray lubricant.

⚠WARNING **Personal Injury Hazard. This procedure requires the use of additional access equipment. Do not place or lean ladders or scaffolds against any part of the machine. Performing this procedure without the proper skills and tools could result in death or serious injury. Dealer service is strongly recommended.**

C-4 Replace Hydraulic Oil

This procedure is required every 1000 hours or annually, whichever comes first, in accordance with specifications.

Replacing or monitoring hydraulic oil is essential for proper machine performance and service life. Dirty oil and a clogged suction strainer may result in poor machine performance, and continued use could cause component damage. More frequent hydraulic oil replacement may be required in extremely dirty operating environments. Refer to Hydraulic Specifications in the Specifications section for hydraulic oil specifications.

1 Fully lower the platform.

2 Remove the plastic cover from the power unit.

3 Remove the drain plug from the hydraulic tank and allow all oil to drain from the tank into a suitable container.

⚠ WARNING **Personal Injury Hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow oil pressure to dissipate gradually. Do not allow oil to squirt or spray.**

4 Remove the hydraulic tank from the hydraulic power unit.

5 Remove the suction strainer from the suction tube and remove the magnet from inside the tank. Clean them using a mild solvent.

6 Install the suction strainer.

7 Apply thread sealant to the threads of the drain plug and install the drain plug.

8 Install the hydraulic tank.

9 Fill the tank with hydraulic oil until the oil level is visible in the sight gauge on the side of the tank. Do not overfill.

10 Replace the breather cap with a new one.

11 Cycle the platform through three full raise and lower cycles. If necessary, add hydraulic oil to allow the platform to reach maximum height.

12 Clean up any oil that may have spilled. Properly dispose of waste oil.

NOTICE **Component Damage Hazard. Do not allow the hydraulic tank to run completely empty while raising the platform. Pressurized air in the hydraulic system will damage hydraulic components.**

C-5 Replace Auxiliary Platform Lowering Battery--AC Models

This procedure is required every 1000 hours or annually, whichever comes first, in accordance with specifications.

1 Turn the key switch to the OFF position and remove the key.

2 Remove the fasteners securing the ground control box cover.

3 Open the ground control box and locate the auxiliary battery pack inside.

4 Remove the fasteners securing the battery pack.

5 Carefully slide the battery pack out of the bracket.

Note: The wires connected to the battery pack are very thin. Use care to avoid damaging the wires.

6 Remove the old batteries from the battery holder.

7 Install new batteries into the battery holder.

Note: Follow the diagram on the inside of the battery holder to ensure correct battery orientation.

8 Install the battery pack into the ground control box and tighten the fasteners.

9 Close the ground control box cover and tighten the fasteners. Do not overtighten.

Repair Procedures



Compliance and Adherence:

☐Repair procedures shall be completed by personnel trained and qualified to perform service on this machine.

☐Damaged or malfunctioning machines shall be immediately tagged out of service and removed from operation.

☐Any machine damage or malfunction shall be repaired prior to operating the machine.

Before Beginning Repairs:

☐Read, understand, and comply with the safety rules and operating instructions contained in the corresponding Operator's Manual provided with your machine.

☐Ensure that all necessary tools and parts are available and ready for use.

☐Use only approved replacement parts.

☐Read each procedure completely and adhere to the instructions. Attempting shortcuts may result in hazardous conditions.

Machine Configuration:

☐Unless otherwise specified, the machine shall be in the following configuration when performing each repair procedure:

- Machine is parked on a firm, level surface
- Key switch is in the OFF position with key removed
- Both ground controller and platform controller red Emergency Stop buttons are in the OFF position
- Wheels are chocked
- All external AC power is disconnected from the machine
- Platform is in the stowed position

About This Section

Most procedures in this section should only be performed by trained service professionals in a properly equipped workshop. After troubleshooting a malfunction, select the appropriate repair procedure.

Perform disassembly procedures only to the extent necessary to complete the repair. When reassembling, follow the disassembly steps in reverse order.

Symbol Legend



Safety Alert Symbol — Used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER — Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING — Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION — Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE — Indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Indicates the correct, expected result after performing a series of steps.

Indicates an incorrect result has occurred after performing a series of steps.

Base Assembly

1-1 Interlock Device

The interlock contacts indicate whether the outriggers are properly installed and only allow machine operation when the outriggers are correctly installed and adjusted into position.

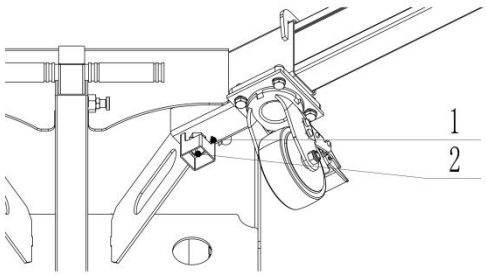
How to Remove the Interlock Contacts

1 Fully lower the platform.

2 Turn the key switch to the OFF position and remove the key.

3 Stow the outriggers in the storage receivers.

4 Remove the outrigger switch protective tube.



1 Outrigger Switch Protective Tube
2 Outrigger Switch

5 Trace the interlock contact wires to the rear of the base.

6 Locate the terminal strip.

7 Tag and remove the contact wires by inserting a small screwdriver into the hole below the wire, gently pushing in while pulling outward on the wire.

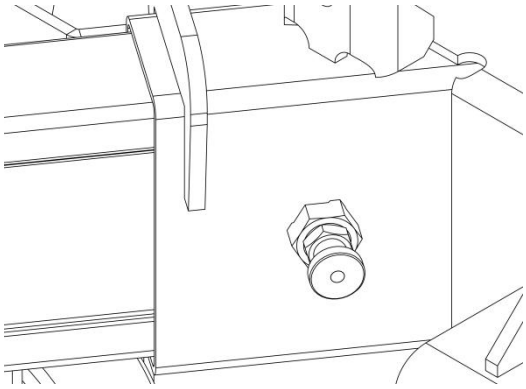
8 Trace the wires to the rubber grommet where the wires enter and exit the base. Pull the wires out of the rubber grommet and the base.

Note: Pull the wires out only far enough to gain access to the interlock contact bracket mounting fasteners.

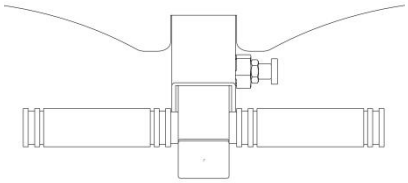
9 Remove the interlock contact bracket mounting fasteners from the outrigger base receiver.

1-2 Chassis Spring Pin

1 The outrigger insertion/removal pin indicates whether the outrigger is properly seated and secures the outrigger.



2 The tie-down bar secures the machine during transport.



How to Remove the Spring Pin

1 Fully lower the platform.

2 Turn the key switch to the OFF position and remove the key.

3 Stow the outriggers in the storage receivers.

4 Remove the knurled nut from the bottom of the spring pin.

2-1 How to Test the Transformer — AC Models

1 Fully lower the platform.

2 Turn the key switch to the OFF position and disconnect power.

3 Open the ground control box and locate the transformer.

4 Tag and disconnect all wires from the transformer.

5 Connect the ohmmeter leads to the following terminal combinations and check for continuity/resistance.

2-2 How to Test the AC Contactor — AC Models

1 Fully lower the platform.

2 Turn the key switch to the OFF position and disconnect power.

3 Open the ground control box and locate the AC contactor.

4 Tag and disconnect all wires from the contactor.

5 Connect the ohmmeter leads to the following terminal combinations and check for continuity/resistance.

2-3 Batteries — DC Models

Statement on Battery Use, Maintenance, and Storage

1. Daily Use and Charging Specifications

1.1 Charging Operation

Correct charging is critical to ensuring the lifespan of VRLA batteries.

Charger Matching: An intelligent charger specifically designed for valve-regulated lead-acid batteries must be used. Old or mismatched chargers are strictly prohibited.

Charging Environment: Charge in a well-ventilated area. Charging in enclosed spaces such as sealed rooms or vehicle seat buckets is strictly prohibited.

Charging Connection Sequence: First connect to the battery terminal, then connect the charger power. After charging is complete, first disconnect the charger power, then disconnect the battery connection.

Charging Parameters: Strictly follow the voltage and current parameters specified by the charger and battery manufacturer. The charging voltage must be compensated according to the ambient temperature (typically -3mV/℃/cell to -5mV/℃/cell).

Charging Cycles:

Daily Charging: It is best to charge the battery pack when the depth of discharge (DOD) reaches 50%-70% to achieve optimal battery life.

Equalization Charging: Voltage imbalance between cells may occur after prolonged use. It is recommended to perform an equalization charge every 2 months or when the open-circuit voltage difference between cells exceeds 0.1V.

1.2 Discharge Precautions

Avoid Deep Discharge: The recommended Depth of Discharge (DOD) for daily use should not exceed 80%. Fully discharging the battery (i.e., voltage drops below the cut-off voltage, e.g., 1.75V/cell at a 3-hour rate) is strictly prohibited.

Monitor Voltmeter: The power or voltage indicator on the vehicle dashboard is for reference only. Charge promptly when the voltage drops noticeably; do not rely solely on the indicator.

2. Maintenance and Care

2.1 Regular Inspection Items

Although VRLA batteries are considered "maintenance-free," regular inspection and care are essential.

Table: Battery Regular Maintenance Checklist

Inspection Item	Inspection Cycle	Normal Status and Required Action
System Voltage	Weekly / Each Charge	Measure the total voltage of the battery pack; confirm it is within the normal range.
Cell Voltage	Monthly	Measure the open-circuit voltage of each battery cell; deviation should not exceed ±0.1V.
Appearance & Cleaning	Monthly	Keep the casing dry and clean. Wipe away dust with a damp cloth; ensure vent holes are unobstructed.
Terminals & Connections	Monthly	Check for looseness or corrosion. Tighten screws, remove corrosion, and apply anti-oxidant.
Casing Condition	Monthly	Check for bulging, deformation, cracks, or leakage.

2.2 Fault Diagnosis and Troubleshooting

Table: Common Fault Diagnosis and Troubleshooting Guide

Fault Symptom	Possible Cause(s)	Corrective Action(s)
Low capacity, short runtime	1. Chronic undercharging 2. High connection resistance 3. Internal water loss or plate sulfation 4. Individual cell failure	1. Perform one full charge-discharge cycle 2. Check and clean all connection points 3. Contact a professional for testing and repair 4. Check and replace the faulty cell
Battery bulging/deformation	1. Chronic overcharging 2. High ambient charging temperature 3. Safety valve failure	1. Stop using immediately; check charger parameters 2. Improve ventilation and heat dissipation 3. Replace the battery immediately
Abnormal heating during charging	1. Excessive charging current 2. Internal short circuit	1. Check if the charger is compatible 2. Stop charging; contact a professional for handling
Rapid static voltage drop	1. Surface contamination causing leakage 2. High internal self-discharge	1. Clean the battery casing 2. Perform a supplementary charge; replace if ineffective

2.3 Storage and Long-term Maintenance

Before Storage: Fully charge the battery, then disconnect it from the vehicle or charger.

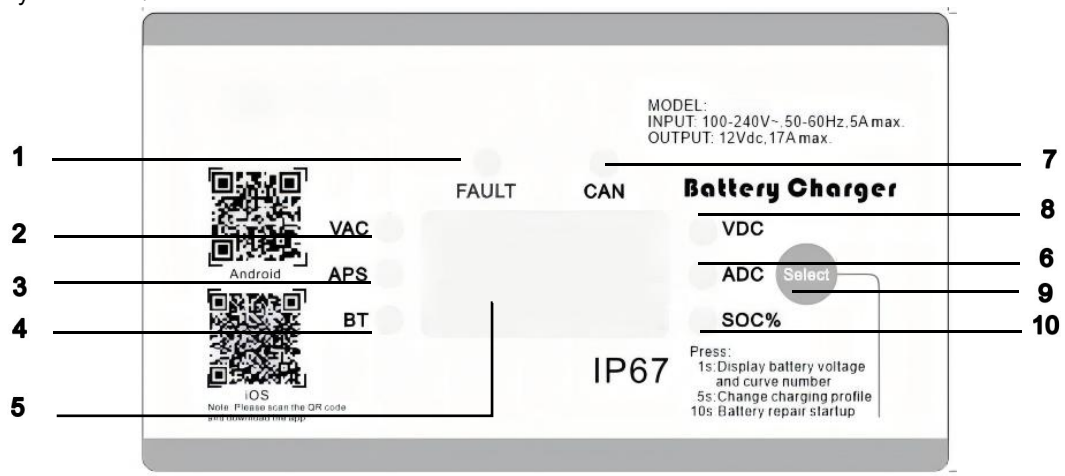
Storage Environment: Store in a cool, dry, well-ventilated place. An ambient temperature of 10℃ to 25℃ (50℉ to 77℉) is ideal.

Periodic Maintenance: For long-term storage, a supplementary charge must be performed every 3 months to prevent power loss due to self-discharge, which can cause irreversible sulfation.

2-4 Battery Charger — DC Models

Charger Fault Diagnosis

1、Dis p lay Pa ne l ：



1-Fault indicator	2-Input voltage indicator	3-Adjustable power supply indicator	4-Bluetooth connection indicator
5-3-digital display screen	6-Output current indicator	7-CAN connection indicator	9-Output voltage indicator
9-Select function button	10-Charge completion percentage		

Select function button: Press for 1 second to display voltage and current curve number, press for 5 seconds to switch curves, and press for 10 seconds to start BR（battery repair）mode.

2、Dis p lay Code ：

Code	FAULT	Reason	Corrective Action
E01	Blink1	1 、 Output terminal: No battery pack voltage detected! 2 、 Output short circuit! Battery polarity reversed at output! 3 、 Output overvoltage! Battery voltage too high!	1、Verify that the cable between the charger and the battery is properly connected. 2 、 Verify that the charger output wiring is correct. 3、Verify that the battery voltage is within the correct range.
E02	Blink2	Abnormal AC input voltage	Check whether the input voltage is within the specified range (85 – 265V).
E03	Blink3	High temperature protection inside the charger	Replace the charging unit.
E04	Blink4	Battery high temperature protection	1. Verify that the battery temperature is within the normal range. 2. Replace the charger plug harness.
E05	Blink5	Charger output over current or no output	Replace the charging unit.
E06	Blink6	Output relay stuck or closed timeout	Replace the charging unit.
E07	Blink7	The lithium battery communication times out or the CANBUS cable is not properly connected	Check whether the CAN bus wiring is connected correctly.
E08	Blink8	No charging curves or missing curve parameters inside the charger	Update the charging profile.

2-5 Distribution Box Internal Terminal Service Chart — DC Models

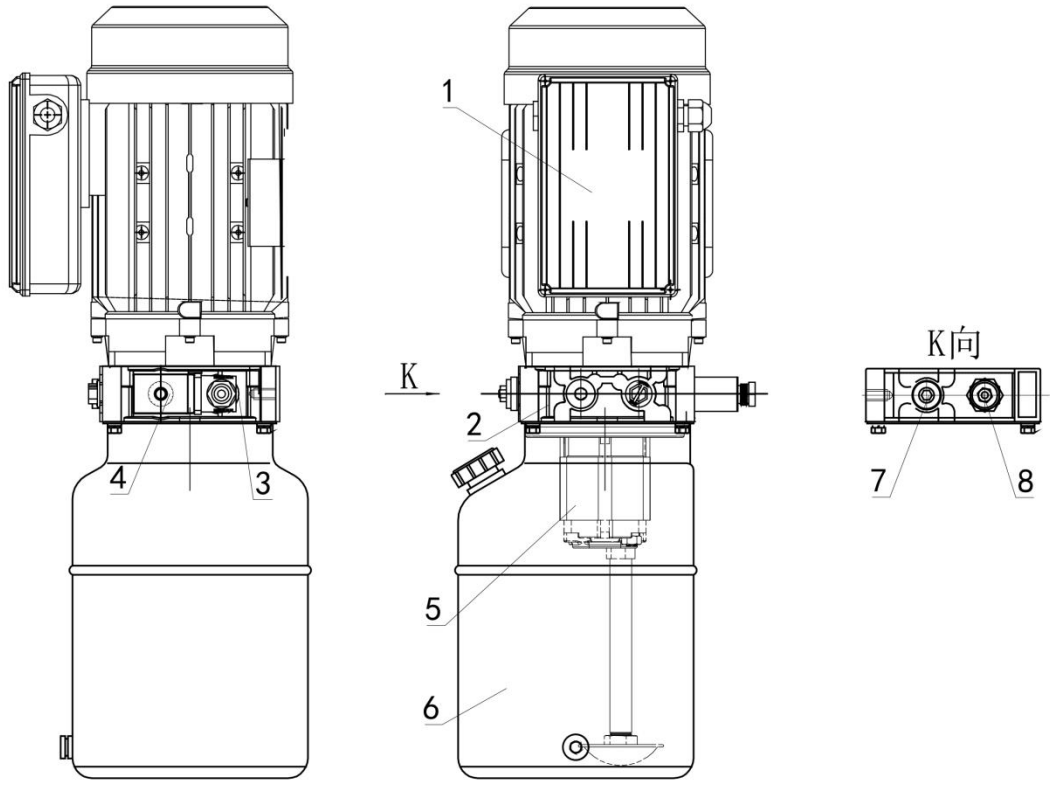
1	Power Input (12V+)
2	Power Input (GND)
3	Not Used
4	Power Output (12V+)
5	Power Output (12V-)
6	Not Used
7	Lowering Solenoid Valve Signal Output (12V+)
8	Lowering Solenoid Valve Signal Output (12V-)
9	Emergency Stop Switch Signal Output (Upper Control)
10	Emergency Stop Switch Signal Input (Upper Control)
11	Action Signal Power Input (Upper Control)
12	Lift Signal Output (Upper Control)
13	Lowering Signal Output (Upper Control)
14	Outrigger Power Signal Output (Chassis)
15	Outrigger Switch Signal Input 1 (Chassis)
16	Outrigger Switch Signal Input 2 (Chassis)
17	Outrigger Switch Signal Input 3 (Chassis)
18	Outrigger Switch Signal Input 4 (Chassis)
19	Upper Limit Switch Power Input
20	Upper Limit Switch Signal Output
21	Reserved
22	Reserved
23	Level Switch Power Output (12V+)
24	Level Switch Power Output (12V-)
25	Level Switch Signal Input
26	Not Used
27	Not Used
28	Warning Light Power Output (12V+)
29	Warning Light Power Output (12V-)
30	Emergency Stop Switch Output (Upper Control)
31	Emergency Stop Switch Input (Upper Control)

2-6 Distribution Box Internal Terminal Service Chart — AC Models

1	Power Input (220V/L)
2	Power Input (220V/N)
3	Ground (PE)
4	Power Output (220V/L)
5	Power Output (220V/N)
6	Ground (PE)
7	Lowering Solenoid Valve Signal Output (12V+)
8	Lowering Solenoid Valve Signal Output (12V-)
9	Emergency Stop Switch Signal Output (Upper Control)
10	Emergency Stop Switch Signal Input (Upper Control)
11	Action Signal Power Input (Upper Control)
12	Lift Signal Output (Upper Control)
13	Lowering Signal Output (Upper Control)
14	Outrigger Power Signal Output (Chassis)
15	Outrigger Switch Signal Input 1 (Chassis)
16	Outrigger Switch Signal Input 2 (Chassis)
17	Outrigger Switch Signal Input 3 (Chassis)
18	Outrigger Switch Signal Input 4 (Chassis)
19	Upper Limit Switch Power Input
20	Upper Limit Switch Signal Output
21	Reserved
22	Reserved
23	Level Switch Power Output (12V+)
24	Level Switch Power Output (12V-)
25	Level Switch Signal Input
26	Not Used
27	Not Used
28	Warning Light Power Output (12V+)
29	Warning Light Power Output (12V-)
30	Emergency Stop Switch Output (Upper Control)
31	Emergency Stop Switch Input (Upper Control)

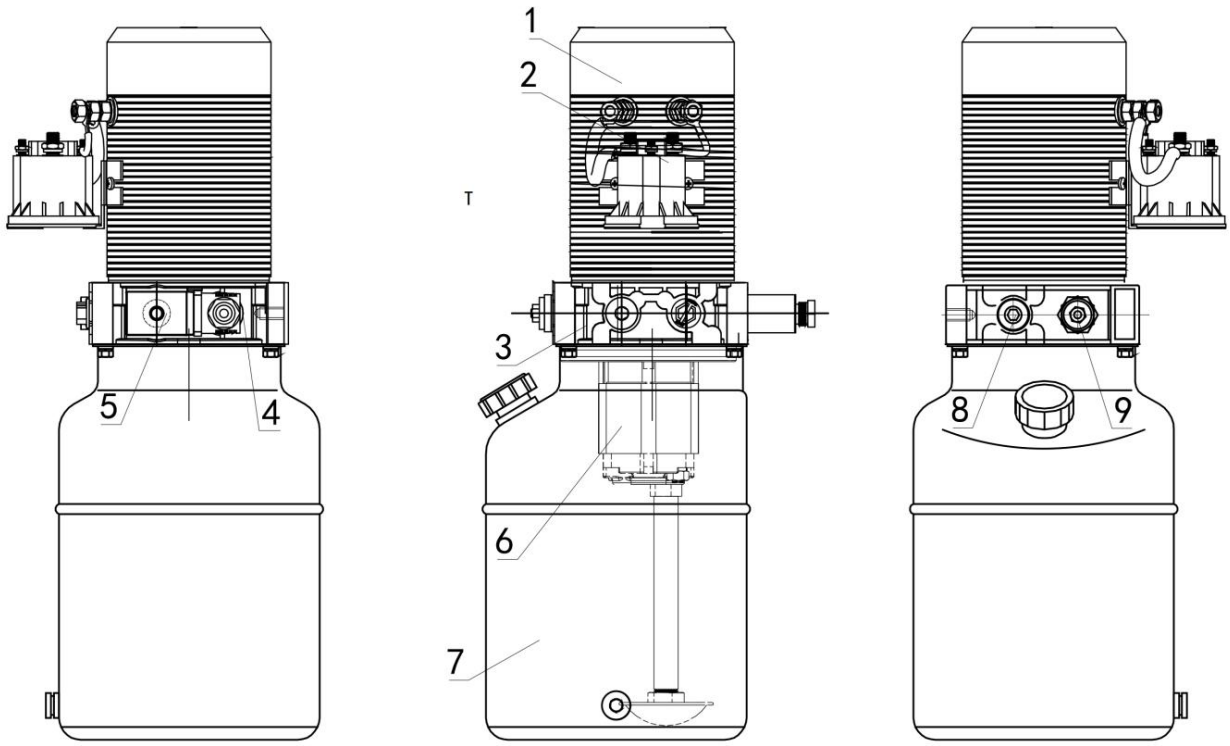
Hydraulic Power Unit

3-1 Hydraulic Power Unit — AC Models



Item No.	Description	Model	Qty.
1	Motor	ML-220150-4F-60	1
1	Manifold Block	F006	1
2	Check Valve	CV-04	1
3	Normally Closed Valve Spool	SCV-SS	1
4	Black Connector	ZT-A-PG11	1
4	Square Coil	F012DC	1
5	Gear Pump	CBKL-G2160	1
6	Hydraulic Tank	5L-TS120C270-V	1
7	Pressure Compensator Valve	RPCV-02-05	1
8	Relief Valve	RV-04	1

3-1 Hydraulic Power Unit — DC Models



Item No.	Description	Model	Qty.
1	Motor	MD24220	1
1	Start Switch	DK0312A-S	1
2	Manifold Block	F006	1
3	Check Valve	CV-04	1
4	Normally Closed Valve Spool	SCV-SS	1
5	Black Connector	ZT-A-PG11	1
5	Square Coil	F012DC	1
6	Gear Pump	CBKL-G2160	1
7	Hydraulic Tank	5L-TS120C270-V	1
8	Pressure Compensator Valve	RPCV-02-06A	1
9	Relief Valve	RV-04	1

3-3 Hydraulic Power Unit

How to Remove the Hydraulic Power Unit — AC Models

1 Fully lower the platform.

2 Turn the key switch to the OFF position and disconnect power.

3 Remove the power unit cover.

4 Tag, disconnect, and cap the hydraulic hoses. Cap the fittings on the power unit.

⚠WARNING **Personal Injury Hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow oil pressure to dissipate gradually. Do not allow oil to squirt or spray.**

5 Tag and disconnect the electrical wires from the valve coils.

6 Remove the cover from the junction box on the motor. Tag and disconnect the electrical wires inside the junction box. Loosen the compression cable fitting on the junction box and pull the wires out through the compression fitting.

DC Models: Tag and disconnect the electrical wires from the motor start solenoid.

7 Support the hydraulic power unit using a suitable lifting device.

8 Remove the power unit mounting fasteners and remove the power unit from the machine.

⚠WARNING **Crushing Hazard. The power unit will fall if not properly supported.**

Note: If installing a new power unit, the relief valve must be properly adjusted. Refer to 3-4 How to Adjust the Relief Valve.

How to Remove the Hydraulic Power Unit — DC Models

1 Fully lower the platform.

2 Turn the key switch to the OFF position and disconnect power.

3 Remove the power unit cover.

4 Tag, disconnect, and cap the hydraulic hoses. Cap the fittings on the power unit.

⚠WARNING **Personal Injury Hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow oil pressure to dissipate gradually. Do not allow oil to squirt or spray.**

5 Tag and disconnect the electrical wires from the valve coils.

6 Tag and disconnect the electrical wires from the motor start solenoid.

7 Support the hydraulic power unit using a suitable lifting device.

8 Loosen the power unit mounting plate fasteners. Do not remove them.

9 Rotate the mounting plate away from the mast column to gain access to the power unit mounting fasteners.

10 Remove the power unit mounting fasteners and remove the power unit from the machine.

⚠WARNING **Crushing Hazard. The power unit will fall if not properly supported.**

Note: If installing a new power unit, the relief valve must be properly adjusted. Refer to 3-4 How to Adjust the Relief Valve.

3-4 Valve Adjustments

How to Adjust the Platform Lift Relief Valve

Note: Ensure the hydraulic oil level is between the FULL and ADD marks on the oil level indicator.

1 Remove the power unit cover.

2 Loosen the lock nut on the relief valve located on the right side of the motor.

3 Set up the machine for operation in accordance with the corresponding Operator's Manual.

4 Place the maximum rated load into the platform. Secure the load to the platform. Refer to Machine Specifications in the Specifications section.

5 Hold the relief valve screw and loosen the lock nut.

6 While activating the platform raise function, turn the relief valve screw clockwise until the platform just begins to rise.

7 Fully lower the platform.

8 Add additional weight to the platform equal to, but not exceeding, 20% of the maximum rated load. Secure the additional weight. Refer to the machine data plate.

9 Activate the platform raise function.

10 The power unit shall not raise the platform. If the power unit raises the platform, turn the relief valve screw counterclockwise until the platform will not raise.

11 Hold the relief valve screw and tighten the lock nut. Ensure the relief valve screw does not turn.

12 Remove the weight from the platform.

13 Install the breather cap and power unit cover.

3-5 How to Test the Motor Start Solenoid

⚠WARNING Electrocution/Burn Hazard.
Contact with live circuits could result in death or serious injury. Remove all rings, watches, and other jewelry.

⚠WARNING Electrocution Hazard.
Disconnect the battery ground cable before performing this procedure.

1 Tag and disconnect the electrical wires from the motor start solenoid.

2 Connect the ohmmeter leads to the following terminal combination and check for continuity/resistance.

Test	Expected Result
Between the two terminals	No continuity (Resistance 13 to 17 Ω)

3 Connect a 12V DC power source to the small terminal and a ground wire to the solenoid housing, then test the following terminal combination.

Test	Expected Result
Between the two terminals	Continuity (Resistance zero Ω)

3-6 How to Replace the Hydraulic Power Unit

Removal

1 Fully lower the platform.

2 Turn the key switch to the OFF position and disconnect power.

3 Remove the power unit cover.

4 AC and DC Models: Separate the two control cable quick-disconnect connectors from the ground control box.

5 DC Models: Separate the battery quick-disconnect connector.

6 DC Models: Disconnect the battery cable from the motor start solenoid.

7 Remove the breather cap from the hydraulic power unit and install a pipe plug in the fill port.

8 Tag, disconnect, and cap the hydraulic hoses on the power unit.

⚠WARNING **Personal Injury Hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow oil pressure to dissipate gradually. Do not allow oil to squirt or spray.**

9 Support the hydraulic power unit and remove the power unit mounting bolts.

⚠WARNING **Crushing Hazard. The power unit will fall if not properly supported when removing from the machine.**

10 Remove the hydraulic power unit.

Installation

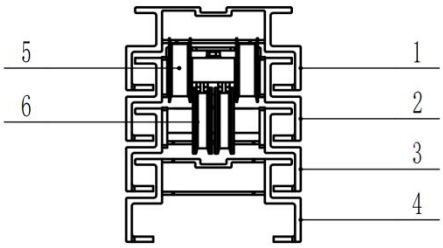
⚠DANGER **Tip-Over Hazard. On narrow base models, the counterweight must be installed on the new power unit.**

NOTICE **Component Damage Hazard. Do not overtighten hydraulic fittings.**

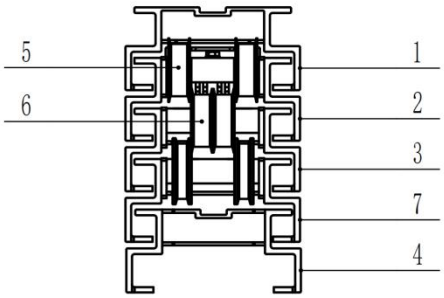
Note: Do not install the motor cover until relief valve adjustment is complete. Refer to the repair procedure How to Adjust the Relief Valve.

Mast Components

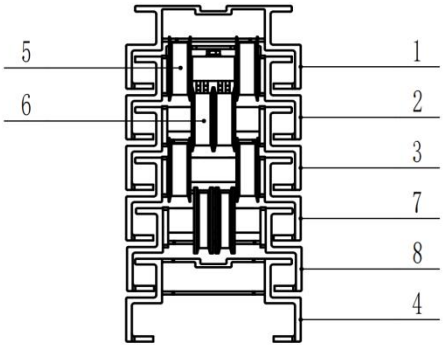
GTWY1-5



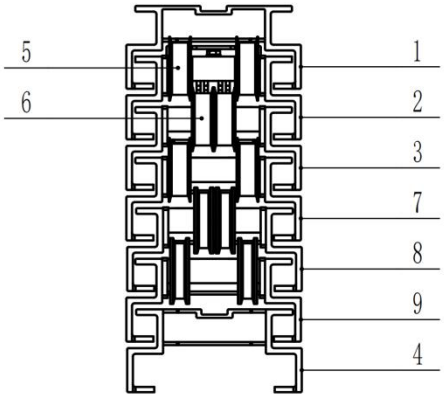
GTWY1-6



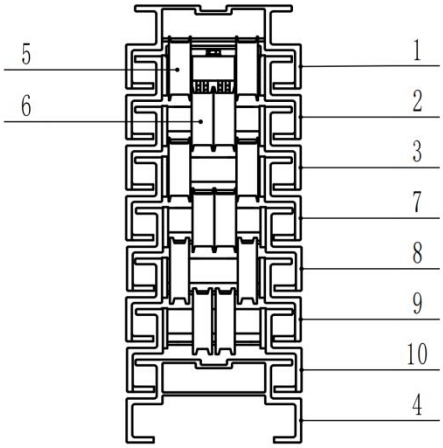
GTWY1-8



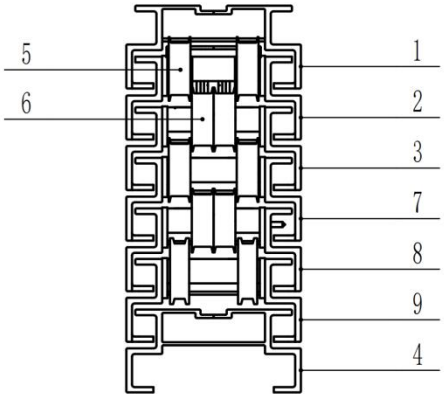
GTWY1-9



GTWY1-10



GTWY1-12



1	First Section Mast Column	6	Sheave Assembly B
2	Cylinder Mast Column	7	Intermediate Mast Column Ⅱ
3	Intermediate Mast Column Ⅰ	8	Intermediate Mast Column Ⅲ
4	Final Section Mast Column	9	Intermediate Mast Column Ⅳ
5	Sheave Assembly A	10	Intermediate Mast Column Ⅴ

4-1 Lift Cylinder

How to Remove the Lift Cylinder

⚠WARNING **Personal Injury Hazard. This procedure requires specific repair skills, lifting equipment, and a suitable workshop. Attempting to perform this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.**

Note: When removing hose assemblies or fittings, O-rings (if equipped) on the fittings and/or hose ends must be replaced. Upon installation, all connections must be tightened to the specified torque. Refer to Hydraulic Hose and Fitting Torque Specifications in the Specifications section.

1 Fully lower the platform.

2 Turn the key switch to the OFF position. Remove the outriggers from the outrigger storage receivers.

DC Models: Remove the battery pack.

3 move the breather cap from the hydraulic power unit and install a pipe plug in the fill port.

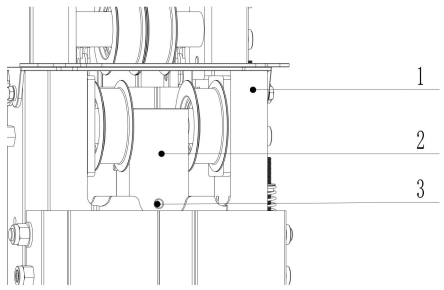
4 Attach an overhead crane to the lifting eye at the top of the mast.

5 Place a carpenter's stand in front of the machine to support the top of the mast.

6 Lift the machine off the ground, then guide the machine onto the carpenter's stand while lowering it. Ensure the carpenter's stand has adequate load capacity.

⚠CAUTION **Crushing Hazard. The machine will tip over if not properly supported by the carpenter's stand.**

7 Remove the socket head cap screws from the cylinder sheave anchor at the rod end of the lift cylinder.



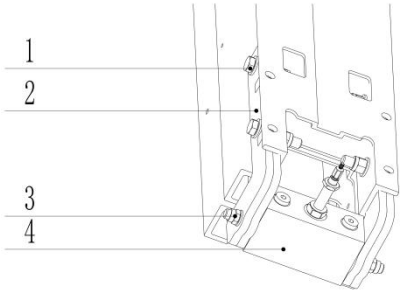
1 Top of Second Section Mast Column
2 Cylinder Sheave Anchor
3 Retaining Fasteners

8 Tag, disconnect, and cap the lift cylinder hydraulic hoses. Cap the fittings on the lift cylinder.

⚠WARNING **Personal Injury Hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow oil pressure to dissipate gradually. Do not allow oil to squirt or spray.**

9 Remove the cylinder mounting fasteners from the cylinder barrel end.

10Loosen the cylinder mounting bracket fasteners.



1 Bracket Mounting Fasteners
2 Cylinder Bracket
3 Cylinder Mounting Fasteners
4 Hydraulic Cylinder

11 Support the cylinder and carefully slide it out from the bottom of the mast.

⚠CAUTION **Crushing Hazard. The lift cylinder will fall if not properly supported.**

4-2 Mast Assembly

How to Remove the Mast Assembly

⚠WARNING **Personal Injury Hazard. This procedure requires specific repair skills, lifting equipment, and a suitable workshop. Attempting to perform this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.**

1 Fully lower the platform.

2 Turn the key switch to the OFF position and remove the key.

3 Remove the platform. Refer to the repair procedure How to Remove the Aluminum Platform.

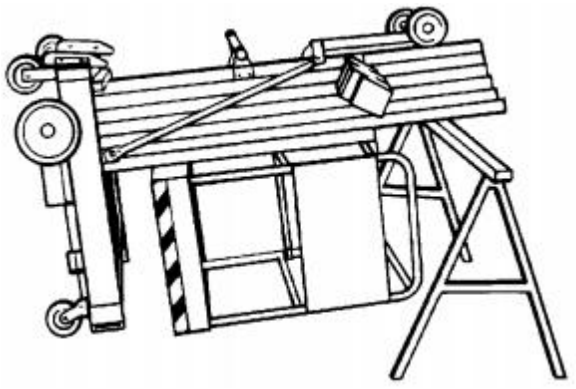
4 Remove the hydraulic power unit. Refer to the repair procedure How to Replace the Hydraulic Power Unit.

5 Remove the tilt-back frame. Refer to the repair procedure How to Remove the Tilt-Back Frame.

6 Attach an overhead crane to the lifting eye at the top of the mast.

7 Place a carpenter's stand in front of the machine to support the top of the mast.

8 Lift the machine off the ground, then guide the machine onto the carpenter's stand while lowering it. Ensure the carpenter's stand has adequate load capacity.



⚠CAUTION **Crushing Hazard. The machine will tip over if not properly supported by the carpenter's stand.**

9 Attach the overhead crane to the base.

10 Lift the base until the mast is horizontal, then place a second carpenter's stand under the mast near the base. Lower the mast onto the carpenter's stand.

11 Remove the cover panel from the rear of the base.

12 Tag, disconnect, and cap the lift cylinder hydraulic hoses. Remove the flow control valve from the cylinder. Cap the cylinder ports.

⚠WARNING **Personal Injury Hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow oil pressure to dissipate gradually. Do not allow oil to squirt or spray.**

13 Remove the mast support mounting bracket fasteners.

14 Remove the four mast mounting fasteners. Push the fasteners toward the mast to provide clearance when removing the mast.

15 Remove the power cable bracket from the side of the mast. Remove the rubber grommets from the access holes in the mast reinforcement plate. Carefully pull the electrical cables and hydraulic hoses downward and out through the bottom of the mast.

16 Attach the overhead crane to the base.

17 Carefully lift the base and remove it from the mast. Use care not to damage the lift cylinder hydraulic fittings when removing the base.

⚠CAUTION **Crushing Hazard. The base will fall if not properly supported when removing from the mast.**

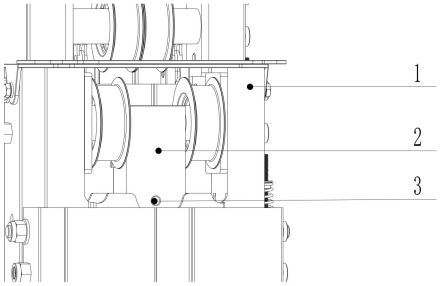
How to Disassemble the Mast

⚠WARNING **Personal Injury Hazard. This procedure requires specific repair skills, lifting equipment, and a suitable workshop. Attempting to perform this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.**

1 Remove the mast. Refer to the repair procedure How to Remove the Mast Assembly.

2 Remove the cylinder mounting fasteners from the cylinder barrel end.

3 Remove the socket head cap screws from the cylinder sheave anchor at the rod end of the lift cylinder.



1 Top of Second Section Mast Column
2 Cylinder Sheave Anchor
3 Retaining Fasteners

4 Support the cylinder and carefully slide it out from the bottom of the mast.

5 Carefully rotate the mast until the slide carriage faces upward.

6 Remove the mast guards.

7 Remove the platform control box cover. Remove the control box mounting fasteners.

8 Remove the control box and control cables and set them aside.

9 Remove the adjustment nuts from all sequencing cables.

10 Slide the slide carriage toward the top of the mast assembly just enough to relieve tension on the lift chains.

11 Slide the mast column section located below the slide carriage approximately 6 in (approx. 15.2 cm) toward the top of the mast to gain access to the tensioning sheave mounting fasteners.

12 Insert a screwdriver into the hole in the tensioning sheave shaft to prevent the shaft from turning. Remove the shaft mounting fasteners, then remove the tensioning sheave assembly.

NOTICE **Be sure to mark the location and orientation of each tensioning sheave assembly.**

13 Remove the adjustment nut from the chain tensioning rocker arm on the slide carriage.

14 Slide the slide carriage out from the bottom of the mast assembly.

15 Lay the chains flat on the ground at the top of the mast. Do not allow the chains to become twisted or contaminated with dirt.

16 Remove the adjustment nut from the chain tensioning rocker arm on the mast column section.

17 Slide that mast column section out from the bottom of the mast assembly.

18 Push the next mast column section toward the top of the mast to gain access to the tensioning sheave assembly mounting fasteners.

19 Insert a screwdriver into the hole in the tensioning sheave shaft to prevent the shaft from turning. Remove the shaft mounting fasteners, then remove the tensioning sheave assembly.

20 Remove the adjustment nut from the chain tensioning rocker arm on that mast column section.

21 Slide that mast column section out from the bottom of the mast assembly.

22 Repeat steps 19 through 22 for each remaining mast column section.

Note: If the chains need to be removed, mark the location of each chain and attach a label before removal.

How to Assemble the Mast

⚠ WARNING **Personal Injury Hazard. This procedure requires specific repair skills, lifting equipment, and a suitable workshop. Attempting to perform this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.**

1 Thoroughly clean all mast column sections.

2 Secure the first section mast column on a carpenter's stand and lay the chains flat on the ground at the top. Do not allow the chains to become twisted or contaminated with dirt.

3 Apply a generous amount of grease to the inner and outer guide channels of each mast column section.

4 Slide the second section mast column into the first section mast column.

5 Lay the chains for the second section mast column flat on the ground. Do not allow the chains to become twisted or contaminated with dirt.

6 Place the chains for the first section mast column inside the second section mast column.

7 Slide the third section mast column into the second section mast column.

8 As the third section mast column is almost fully inserted, guide the chains for the first section mast column into the chain tensioning rocker arm on the third section mast column.

9 Install the adjustment nuts on the chains for the first section mast column. Tighten the adjustment nuts until the lift chain tension is even and the chain tensioning rocker arm is centered in the mast column inspection hole.

10 Lay the chains for the third section mast column flat on the ground. Do not allow the chains to become twisted or contaminated with dirt.

11 Place the chains for the second section mast column inside the third section mast column.

12 Follow steps 4 through 11 for each remaining mast column section and the slide carriage.

13 After all mast column sections are assembled, install the tensioning sheave assemblies.

14 Push the third section mast column toward the top of the mast to relieve tension on the lift chains of the second section mast column.

15 Install the tensioning sheave assembly onto the top of the second section mast column. Securely tighten the mounting fasteners. Do not overtighten.

Note: Verify that all tensioning sheaves rotate freely without excessive side-to-side movement. Verify that sheaves do not rub against the inside of the mast columns. If necessary, replace worn spacers. Refer to the maintenance procedure Inspect Mast Assembly for Wear.

Specification

Item	Maximum Allowable Value
Side-to-Side Movement	0.079 in (approx. 2 mm)

16 Repeat steps 14 and 15 for each remaining tensioning sheave assembly.

17 Verify that all tensioning sheave shaft mounting fasteners are flush with the mast column surface.

⚠ CAUTION **Component Damage Hazard. Rollers may be damaged if the tensioning sheave shaft mounting fasteners are not flush with the mast column.**

18 Install the mast assembly onto the base.

19 Adjust the lift chains. Refer to the repair procedure How to Adjust the Lift Chains.

Note (IWPS Models): Adjust the base release cable. Refer to the repair procedure How to Adjust the Base Release Cable.

4-3 Wear Pads

How to Adjust the Wear Pads

1 Fully lower the platform.

2 Turn the key switch to the OFF position and remove the key.

3 Locate the upper and lower wear pad adjustment bolts below each upper roller bolt on both sides of each mast column section.

4 Hold the wear pad bolt and loosen the lock nut on all wear pads.

5 Turn all wear pad adjustment bolts clockwise until the wear pads contact the mast column. Adjust the wear pads on both sides of all mast column sections. Ensure that both sides of each mast column section are flush with each other within 1/8 in (approx. 3.17 mm).

6 Starting with the first section mast column, tighten the upper and lower wear pad bolts to 12 in-lb (approx. 1.35 N·m). Hold the wear pad adjustment bolt and tighten the lock nut. Ensure the wear pad bolt does not turn.

7 Repeat step 5 for the remaining upper and lower wear pads on both sides of the mast columns. Begin with the first section mast column and proceed toward the slide carriage.

8 Repeat step 5 for all upper and lower wear pads.

Note: Ensure that the wear pad bolts on both sides are adjusted evenly to maintain squareness of the mast column sections.

4-4 Lift Chains

How to Adjust the Lift Chains

1 Fully lower the machine and check that all mast column sections are properly adjusted.

- Result 1: The top of each mast column section is approximately 3/8 in (approx. 1.0 cm) higher than the previous section. The mast column sections are properly adjusted.
- Result 2: Any mast column section is more than 3/8 in (approx. 1.0 cm) higher than the previous section. Mast column section adjustment is required.

Note: The two mast column sections closest to the base are not adjustable. Their tops shall be approximately flush.

Adjusting the Mast Chains:

2 Mark the mast column section to be adjusted.

3 Raise the platform 6 ft (approx. 2 m).

4 Evenly turn the adjustment lock nuts on both chain anchor ends. Turn clockwise to raise the mast column, or counterclockwise to lower the mast column.

5 Fully lower the machine and verify the alignment of the mast column sections. Adjust as necessary.

6 Verify that the chain anchor end tension is even on each mast column section and that the lock nuts are tightened.

Lift Chain Inspection Table

Inspection Item	Inspection Procedure	Out-of-Service Criteria	Corrective Action
Wear	Observe the chain section passing over the tensioning sheave. Check for visible elongation or stretch due to wear.	Chain exhibits visible elongation, or pitch increase causes abnormal engagement with the sheave.	Replace both chains on that mast column section. Replace the entire chain. Do not repair only the damaged section of chain.
Rust / Corrosion	Visually inspect the chain for rust or corrosion.	Evidence of rust or corrosion is present.	Remove the chain and inspect link plates for cracks (see Cracked Link Plates). If no cracks are found, lubricate the chain with oil (SAE 40) and install.
Lubrication	Visually inspect the chain for lubrication.	Outer surfaces are dry, with no protective oil film.	Lubricate the chain with oil (SAE 40W).
Sticking / Binding Links	Manually flex the chain link joints to check for freedom of movement.	Joints are stiff, do not flex freely, or exhibit binding.	If rust is found, refer to corrective action under Rust/Corrosion. If link plates or pins are bent or deformed, replace the entire chain. Replace both chains on that mast column section. Do not repair only the damaged section of chain.
Protruding or Turned Pins	Visually inspect whether pin ends protrude beyond the link plate surface.	Pin ends are visibly protruding.	Replace both chains on that mast column section. Do not repair only the damaged section of chain.
	Visually inspect whether pins have turned.	Flats of all V-heads are not aligned; misalignment is visible.	Replace both chains on that mast column section. Do not repair only the damaged section of chain.
Link Plate Side Wear	Visually inspect the pin heads and outer link plates where they contact the tensioning sheave edge.	Pin heads show noticeable flattening, or the outer link plate profile is visibly altered by wear.	Replace both chains on that mast column section. Do not repair only the damaged section of chain. Check alignment of chain anchor ends and tensioning sheaves.
Chain Anchor End	Visually inspect the anchor components where the chain attaches to the mast.	Anchor jaw is cracked or broken.	Replace the chain anchor end.
		Anchor structure is bent or damaged.	Replace the chain anchor end.
		Anchor is installed crooked or twisted, causing uneven chain tension.	Realign the chain anchor end to ensure even chain loading.
		Adjustment limit is reached; the threaded rod is no longer visible through the inspection hole.	Replace the chain anchor end and threaded rod.
Tensioning Sheave	Visually inspect the condition of the chain tensioning sheave.	Sheave side flange is visibly thinned or deformed due to wear.	Replace the tensioning sheave and check chain alignment.
		The working surface of the sheave that contacts the chain shows visible grooves or dishing.	Replace the tensioning sheave.
Cracked Link Plates	Visually inspect the chain link plates.	Any hairline crack or fracture is visible on any link plate surface.	Replace both chains on that mast column section. Replace the entire chain. Do not repair only the damaged section of chain.

Tilt-Back Frame — GTWY1-12

5-1 Tilt-Back Frame

How to Remove the Tilt-Back Frame

1 Fully lower the platform.

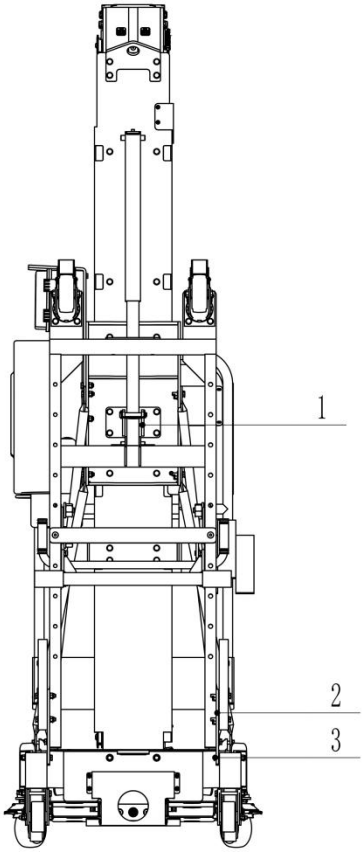
2 Turn the key switch to the OFF position and remove the key.

3 Firmly grasp the tilt-back frame and remove the retaining pin. Lower the tilt-back frame to the ground.

4 Remove the fasteners securing the tilt-back frame mounting plate to the base.

Note: Record the number of shims used between the hinge and the base.

5 Remove the frame from the machine.



1 Gas Spring Pin
2 Tilt-Back Frame Mounting Plate
3 Tilt-Back Frame Retaining Bracket

6-1 Platform

How to Remove the Aluminum Platform

1 Place support blocks between the platform and the base. Lower the platform onto the support blocks.

⚠WARNING **Crushing Hazard. Keep clear of the platform while it is lowering.**

2 Remove the mounting fasteners from the platform.

3 Pull the platform away from the mast and remove it from the machine.

⚠WARNING **Personal Injury Hazard. Safety decals are essential to the safe operation of the machine. Failure to replace all safety and instructional decals could result in death or serious injury. If the platform must be replaced, ensure all appropriate safety and instructional decals are applied to the new platform.**

6-2 Platform Control Box

How to Test the Contacts

1 Fully lower the platform.

2 Turn the key switch to the OFF position and disconnect power.

3 Remove the platform control box cover fasteners and open the control box.

4 Note the marking on the contact to be tested.

N.O. indicates the contact is normally open.

N.C. indicates the contact is normally closed.

5 Connect a continuity tester to the exposed screw terminals.

⊙Result: Normally open contacts shall show no continuity. Normally closed contacts shall show continuity.

6 Press the small triangular button on top of the contactor.

⊙Result: Normally open contactors shall show continuity. Normally closed contacts shall show no continuity.

How to Test Platform Receptacle Power

1 Fully lower the platform.

2 Turn the key switch to the OFF position and remove the key.

3 AC and DC Models: Ensure AC power is properly connected.

4 Connect a voltmeter or small power tool to the platform GFCI receptacle.

5 Verify the voltage reading or test the operation of the power tool.

Result: Voltage shall be nominal 220V（110V-240V）AC, or the power tool shall operate normally.

6 Press the black TEST button on the receptacle.

⊙Result: Voltage shall be 0V, or the power tool shall stop operating.

7 Press the red RESET button on the receptacle.

⊙Result: Voltage shall be nominal 220V（110V-240V）AC, or the hand tool shall resume normal operation.

Schematics



Compliance and Adherence:

☐Troubleshooting and repair procedures shall be completed by personnel trained and qualified to perform service on this machine.

☐Damaged or malfunctioning machines shall be immediately tagged out of service and removed from operation.

☐Any machine damage or malfunction shall be repaired prior to operating the machine.

Before Troubleshooting:

☐Read, understand, and comply with the safety rules and operating instructions contained in the corresponding Operator's Manual provided with your machine.

☐Ensure that all necessary tools and test equipment are available and ready for use.

About This Section

This section contains two sets of schematics.

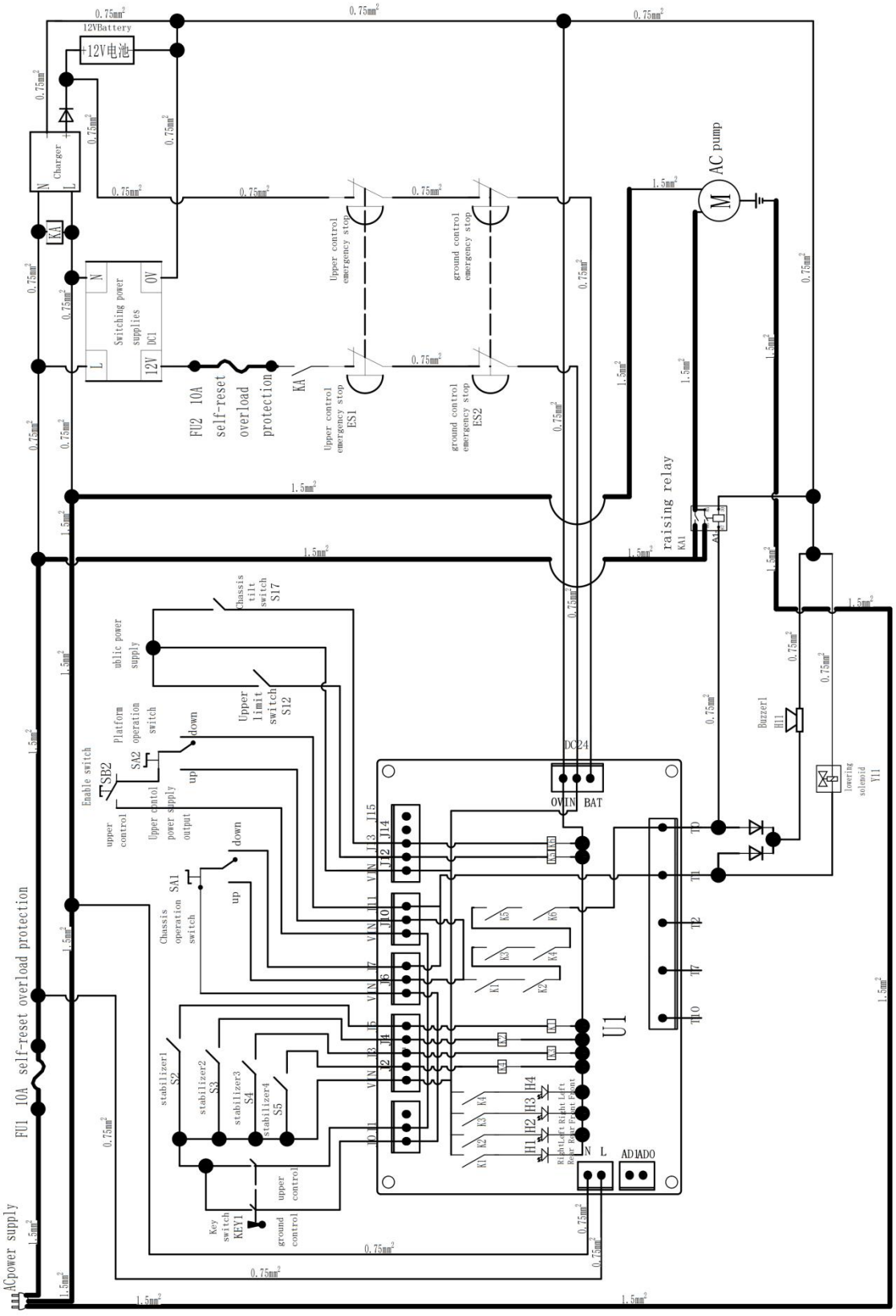
Electrical Schematics

Electrocution/Burn Hazard.
WARNING **Contact with live circuits could result in death or serious injury. Remove all rings, watches, and other jewelry.**

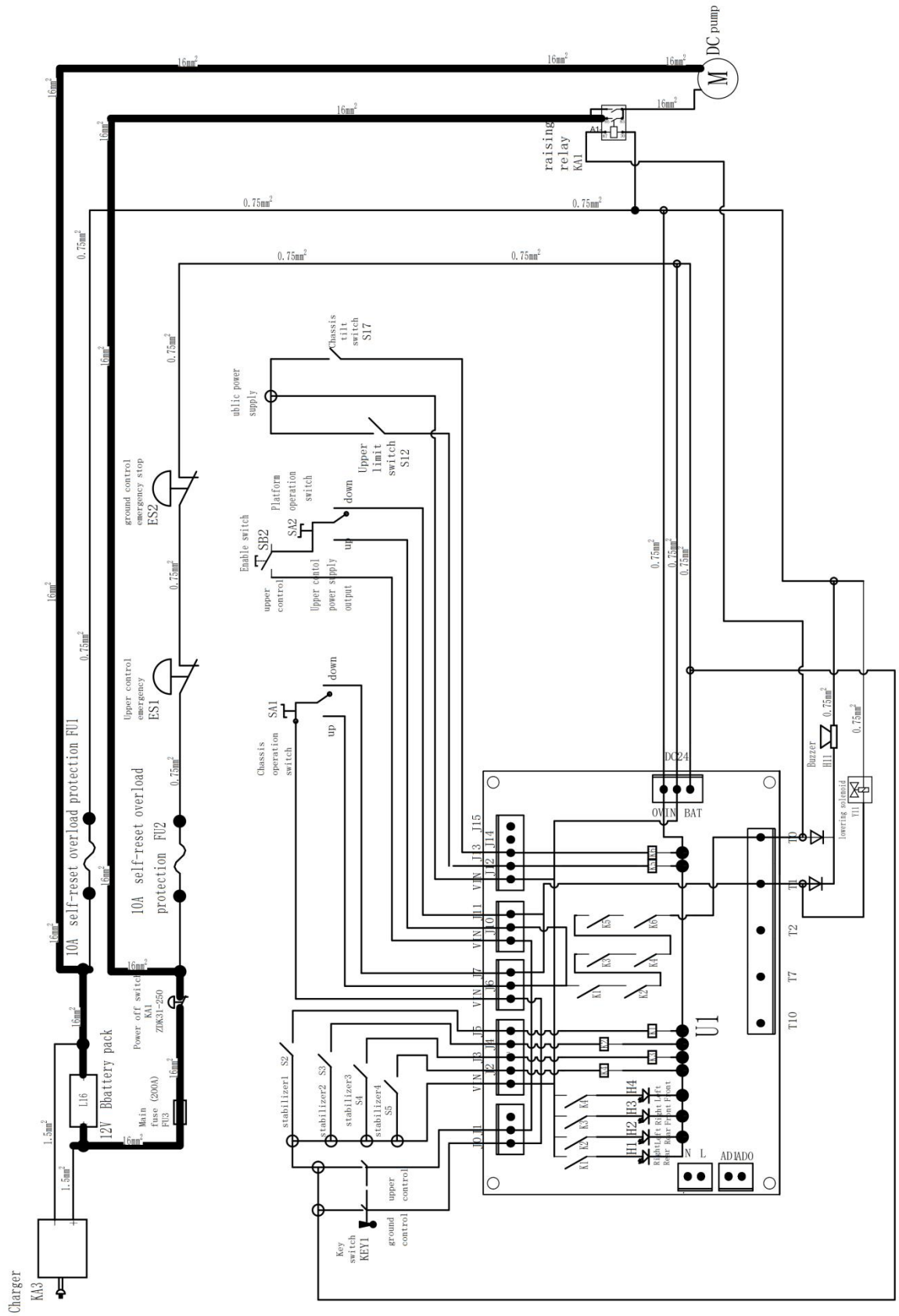
Hydraulic Schematics

Personal Injury Hazard.
WARNING **Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow oil pressure to dissipate gradually. Do not allow oil to squirt or spray.**

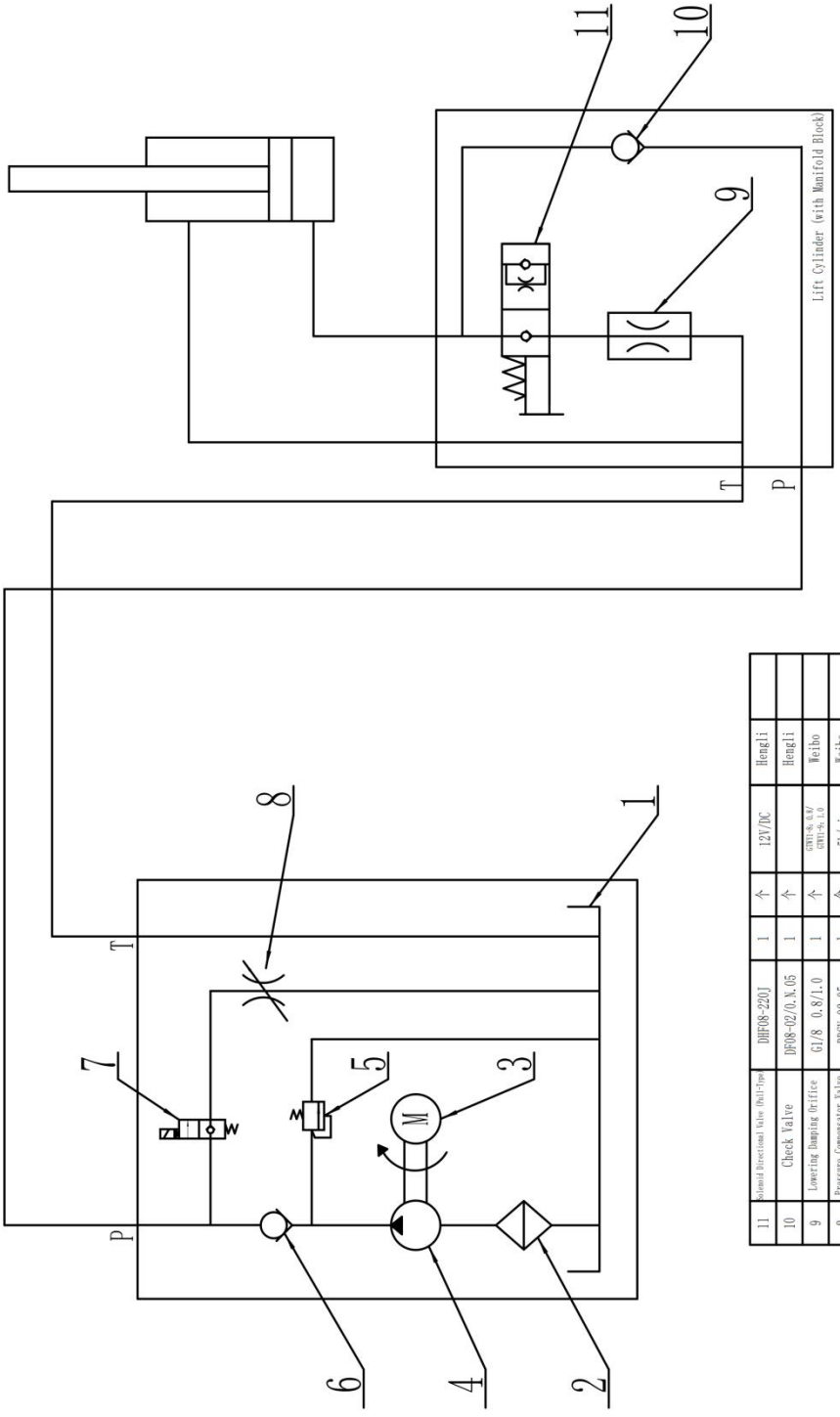
Electrical Schematics-AC models



Electrical Schematics-DC models



Hydraulic Schematics



No.	Description	Model	Qty.	Unit	Characteristics	Brand	Remarks
11	Solenoid Directional Valve (Pull-Type)	DHF08-220J	1	个	12V/DC	Hengli	
10	Check Valve	DF08-02/0.N.05	1	个		Hengli	
9	Lowering Damping Orifice	G1/8 0.8/1.0	1	个	CDV1=% 0.8/ CDV2=% 1.0	Weibo	
8	Pressure Compensator Valve	RPCV-02-05	1	个	5L/min	Weibo	
7	Solenoid Valve	SCV-0120C	1	个	12V Normally Closed	Weibo	
6	Check Valve	CV-04	1	个		Hankesi	
5	Relief Valve	RV-04	1	个	14Mpa	Weibo	
4	Gear Pump	CBKL-G2160	1	个	3.3cc/r	Weibo	
3	Motor	WM220150-4F	1	个	220V 1.5KW 1450rpm 12N	Mahle	
2	Filter	FS-03B	1	个	150um	Weibo	
1	Hydraulic Tank	5L-TS120C270-V	1	个	5L Vertical	Weibo	